AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

Volume 68 Number 25

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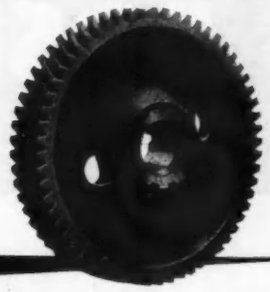

TEXTOLITE
TIMING GEARS

TIMING DRIVE SUPERSTITIONS

IF you have not had recent experience with the production of nonmetallic timing gears, it is easy to believe that their use involves serious difficulties in the shop.

Now that "green castings" are out, accurate center distances a commonplace, and precision gear-cutting available for mass production, this belief is a supposition, not a fact.

Those manufacturers who are using nonmetallic gear-timing drives have lower costs and fewer complaints on noisy timing drives, not only in the shop, but also after their jobs are in the hands of the public. General Electric Company, Plastics Department, West Lynn, Mass.

830-137

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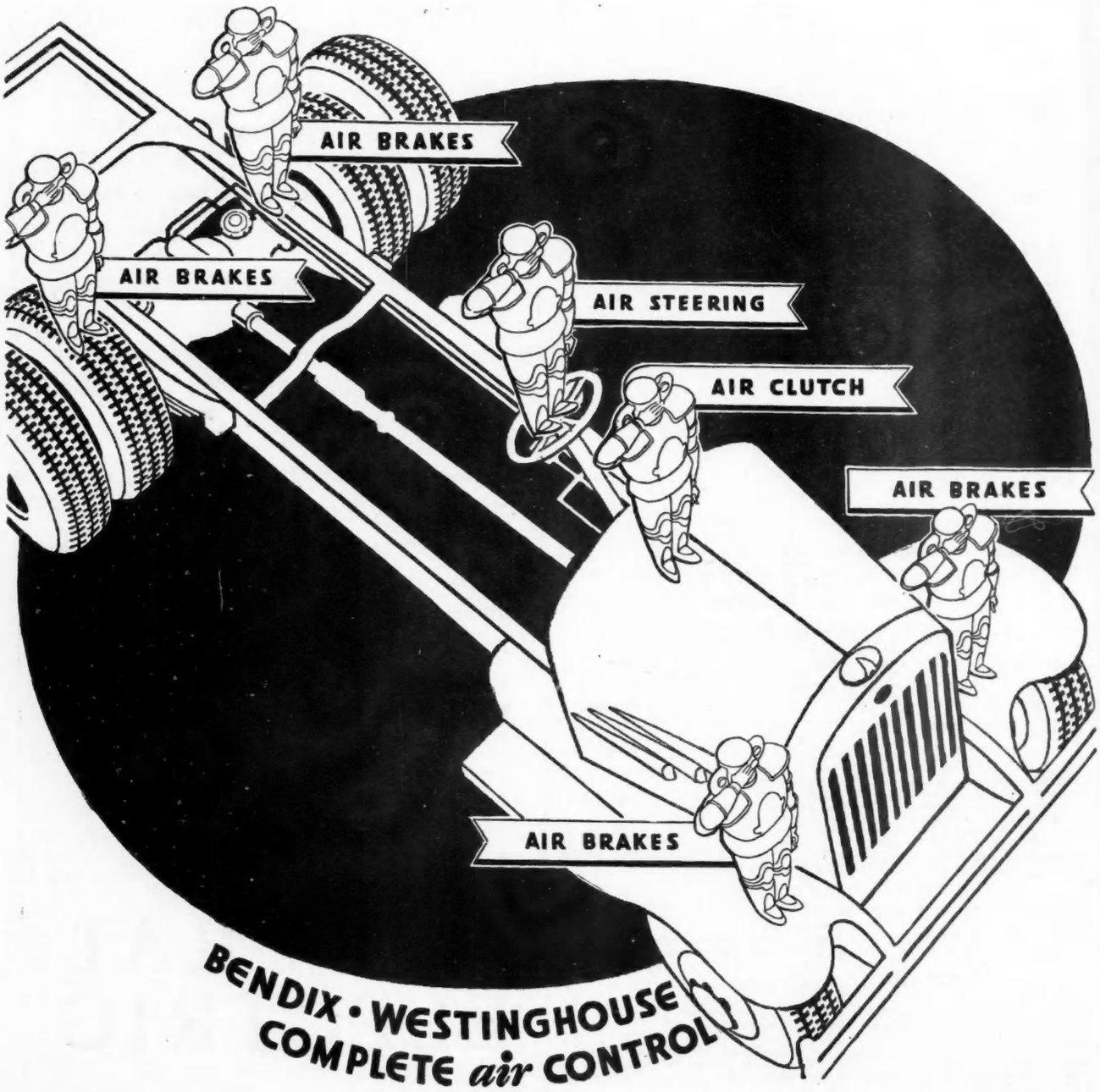
POSITIVE POWER

where YOU NEED IT, *when* YOU NEED IT

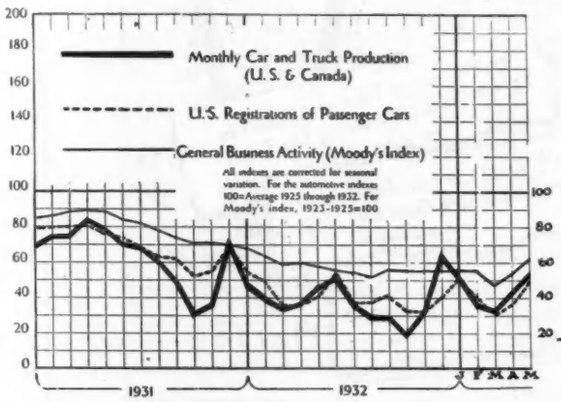
Continuing a quality of leadership which keeps all genuine Air Brake products definitely in advance of constantly changing operating conditions, Bendix-Westinghouse offers a centralization of control in one complete system. Certainly, now, no amount of optimism can keep you satisfied with less than the Bendix-Westinghouse standard of safety and efficiency which brings the smooth, giant-power and traditional dependability of the world standard braking system to your steering control—its effortless, feather-touch to your clutch. In short, it will be well worth your effort to investigate this strikingly modern control, which guarantees positive power—where you need it, when you need it. For information on any phase of modern Air Control address the Bendix-Westinghouse Automotive Air Brake Company, Pittsburgh, Pa.



AUTOMOTIVE INDUSTRIES

Vol. 68, No. 25 • THIRTY-FIFTH YEAR • June 24, 1933

Up! Up!! Up!!! Goes Automotive Production



A leader always—the industry is showing the way to economic recovery, increasing output, busier plants, more men at work, stimulated activity in allied lines build up greater buying power

May Best Month in Two Years

Monthly Production of Cars and Trucks

	1931	1932	1933
Jan.	142,869	123,075	133,402
Feb.	187,948	122,895	110,123
Mar.	241,727	127,277	125,224
Apr.	300,960	155,136	189,284
May	282,096	192,505	225,000*
June	215,979	190,204	
July	187,324	118,613	
Aug.	158,851	94,391	
Sept.	111,336	86,483	
Oct.	59,176	51,625	
Nov.	49,996	61,760	
Dec.	99,921	109,542	
Total	2,038,183	1,433,506	

* Estimated.

48-55-62-65!

Behind these figures lies the story of the steepest rise in business activity this nation has ever known. They measure the forward march of industry and commerce through March, April, May and June to the highest levels attained since 1931.

Simultaneously automotive production has undergone an even more rapid acceleration. After seasonal adjustment indexes of motor vehicle output have climbed from the low of 32 in March to 44 in April and then on and up to 53 in May and 60 in June.

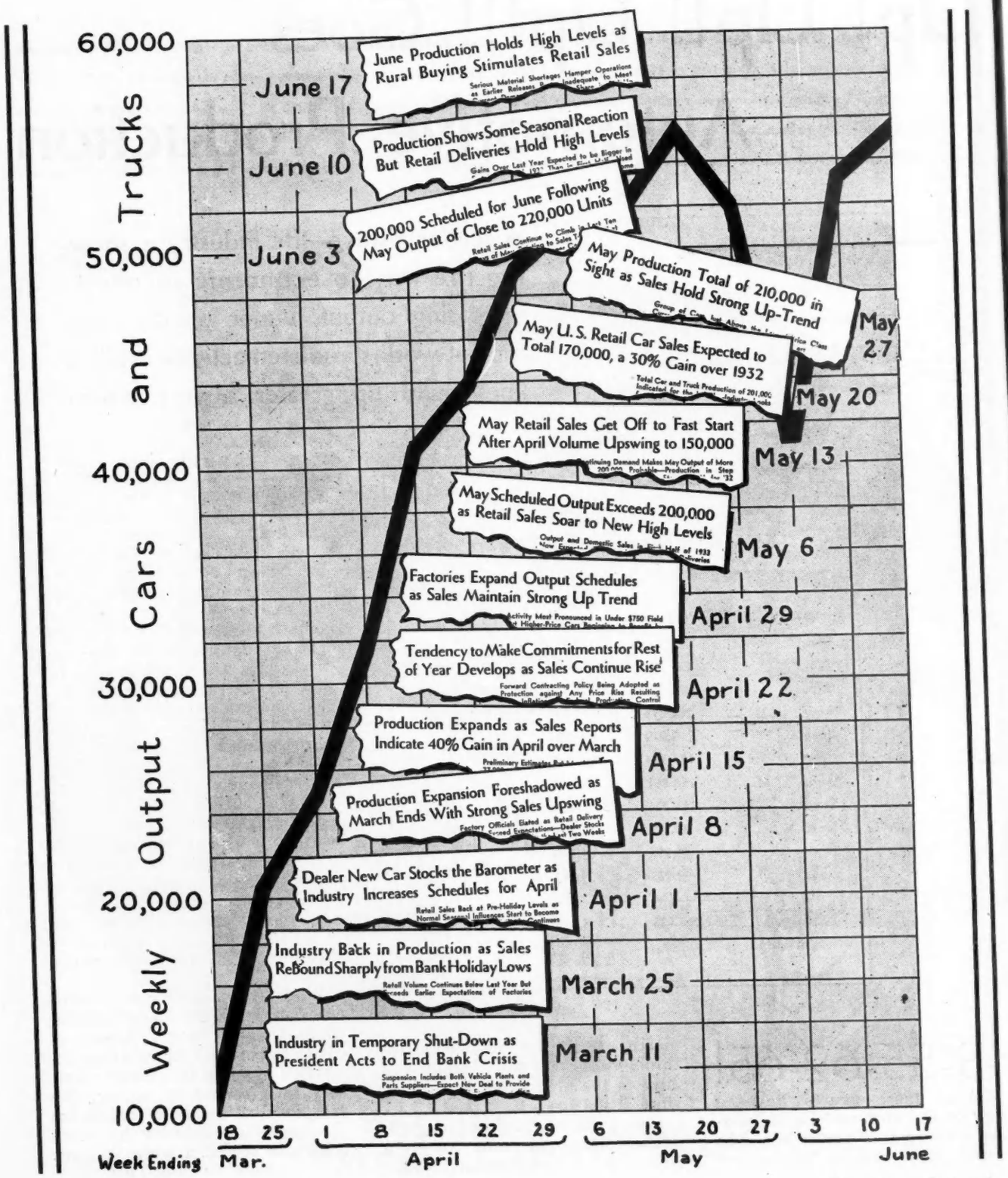
Once again the automotive industry has proved its claim to leadership in the country's economic life. The amazing expansion in automotive production since the dark days of early March has been a factor of dominant importance in the phenomenal recovery which business has enjoyed in the last 90 days. Not only has the almost vertical rise in automobile output put men back to work in the industry's vehicle and parts plants, but it has been the major factor in expanding steel mill activity to more than three times the March rate. Moreover, rubber, cotton, non-ferrous metals and other materials all have been stimulated in varying degrees by the upward rush of automotive sales.

While the new administration's efforts to stem the tide of deflation unquestionably were factors of major importance in effecting the reversal in public psychology necessary to a revival in buying, this does not dim the credit that is due the automotive industry for being ready for the turn when it came.

[TURN TO PAGE 770]

From the Bottom Up!

The Rise in Automotive Production and Sales As Recorded in the Special Weekly Reports to Automotive Industries Published During the Last Fifteen Weeks


Weekly Output Cars and Trucks
60,000
50,000
40,000
30,000
20,000
10,000
June 17
June 10
June 3
June Production Holds High Levels as Rural Buying Stimulates Retail Sales
Production Shows Some Seasonal Reaction But Retail Deliveries Hold High Levels
200,000 Scheduled for June Following May Output of Close to 220,000 Units
May Production Total of 210,000 in Sight as Sales Hold Strong Up-Trend
May 27
May U. S. Retail Car Sales Expected to Total 170,000, a 30% Gain over 1932
May 20
May Retail Sales Get Off to Fast Start After April Volume Upswing to 150,000
May 13
May Scheduled Output Exceeds 200,000 as Retail Sales Soar to New High Levels
May 6
Factories Expand Output Schedules as Sales Maintain Strong Up Trend
April 29
Tendency to Make Commitments for Rest of Year Develops as Sales Continue Rise
April 22
Production Expands as Sales Reports Indicate 40% Gain in April over March
April 15
Production Expansion Foreshadowed as March Ends With Strong Sales Upswing
April 8
Dealer New Car Stocks the Barometer as Industry Increases Schedules for April
April 1
Industry Back in Production as Sales Rebound Sharply from Bank Holiday Lows
March 25
Industry in Temporary Shut-Down as President Acts to End Bank Crisis
March 11
18 25 1 8 15 22 29 6 13 20 27 3 10 17
Week Ending
Mar.
April
May
June

JUST AMONG OURSELVES

Three Year Smile Record

LAST week in New York seemed almost like automobile show week. The mid-town section fairly gleamed with the brass hats of the industry, a majority of whom were in town for the annual members meeting of the N.A.C.C. and the directors' meeting held on the preceding day.

Not in three long, hard years have we seen as many smiles on the faces of these same executives; heard so many encouraging statements based on fact; sensed so strongly the rebirth of hope and sincere confidence in automotive hearts. We got a real thrill out of the conservative optimism reflected from conversations with such men as Roy Chapin, Roy Faulkner, Paul Seiler, W. R. Angell, Alvan Macauley and others.

* * *

N.A.C.C. Code Uncertain

APPOINTMENT of a committee to make a study of the industrial control bill and "to report back upon the desirability of adopting a trade code" was, of course, the big news from the N.A.C.C. members meeting.

"We are in full sympathy with the objectives of short hours and minimum wages as contained in the Industrial Recovery Act, and will cooperate in the administration of them," Alvan Macauley, N.A.C.C. president, said in an official statement following the meeting. "Whether it is necessary or desirable for us to present a trade code is something which we want to study thoroughly before taking action," the statement continued.

* * *

Will Uncle Sam Insist?

THIS means, we take it, that the automobile industry isn't going to rush headlong into any detailed code, binding under the new law.

We've talked with several executives outside the automotive field who have been spending much time in Washington lately trying to learn the full implications and probable administrative attitudes in connection with their new legislation. Automotive men, of course, have been into the situation in detail as well.

It is our impression that nobody can tell at this writing whether or not the industry as a whole would gain more than it would lose by taking an aggressive attitude toward formation of a code for approval. Dispatches from Washington indicate clearly a desire on the part of the Government to have our industry, along with several other major industries, be among the first to begin functioning under the new act.

We reflect nobody's opinion but our own when we say that the collective bargaining phases of the industrial control bill, even as modified, are the ones which need the most careful analysis before a code proposal is made unless the industry is prepared to change the form of its traditional relationships with labor to a marked degree.

It is not yet clear, to us, at least, what the attitude of the Government will be as regards certain large industries should those industries fail to present a code of their own volition.

* * *

Next 6 Days Will Tell

SCORES of comments might readily be made about this momentous legislation and its apparent relationship to the future course of our industry in manifold directions. The more one looks into the question, the more *possible* implications one sees.

We have a strong hunch, however, that many of the questions now existing are best treated as Napoleon is said to have handled his correspondence. It was his practice never to answer any letter for at least two weeks, at the end of which time, he said, most of the letters no longer needed any answer.

The actual events of the next 6 days, we think, will render obsolete most detailed speculations which might be made on this subject at the moment.—N. G. S.

Accelerator and Clutch Pedals Control Sp

Closing throttle effects upward changes automatically while disengaging clutch gives downward changes in ratios

By P. M. HELDT,
Engineering Editor, Automotive Industries

A TRANSMISSION with three forward speeds and reverse in which gear changes for forward drive are controlled entirely by operation of the clutch and accelerator pedals has been developed by the Macallen Company of Boston, Mass.

The only new element in the Macallen transmission is what is known as the torque - balancing mechanism, of which longitudinal and transverse sections are shown in Fig. 1. *A* is a gear keyed to the drive shaft, which takes the place of the main drive pinion in the conventional automobile transmission and is provided with a lateral flange forming a drum. Within this drum there is a torque-balancing member *C*, which is free to turn on the drive shaft, and in between parts *A* and *C* there is a lateral flange on the gear *B*, which flange has slots cut in it in which are located rollers *r*. While the interior surface on the flange of *A* is cylindrical, the exterior surface of *C* is cam-shaped, similar to the outer surface of the inner member of a roller clutch, and the rollers *r* can wedge in between the cylindrical inner surface on *A* and the cam-shaped surfaces of *C*. Gear *B* is the driven member of this torque-balancing mechanism, the torque being transmitted to it by the rollers *r* when they are wedged in between parts *A* and *C* and bear against the driving face of the slots in the flange on *B*.

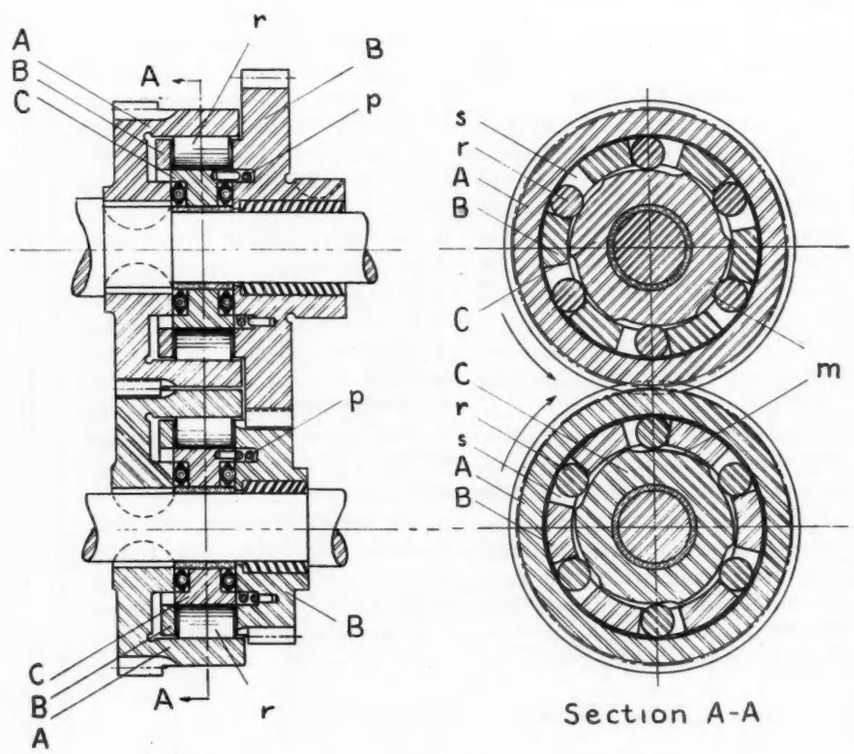


Fig. 1—Torque-Balancing Mechanism of Macallen Transmission

Two of these torque-balancing mechanisms are provided in the Macallen transmission, one for the direct drive and the other for the intermediate gear, and in addition there is a plain over-running clutch for the low gear.

In each of the torque-balancing mechanisms there is a coiled torsion spring *p* which tends to turn the torque-balancing member *C* relative to the driven member *B* in such a direction that the rollers are released and forced against the non-driving faces of the slots in *B*, that is, those opposite the driving faces. To transfer the rollers from the non-driving to the driving faces of the slots, the driving member must be synchronized with the driven member and over-run it for an instant.

Referring now to the longitudinal sectional view of the transmission, Fig. 2, 1 is the main drive shaft and 2 the countershaft. Also, *Y* represents the torque - balancing mechanism for the direct drive and *W* that for intermediate speed. Gear 3 of mechanism *Y* is keyed to shaft 1 and meshes with gear 4 of mechanism *W*, this gear being keyed to the countershaft. In this particular design gears 3 and 4 are of the same size, but this is said to be not necessary. Gear 5 of mechanism *W* is the driven member of this mechanism, which is loose on the countershaft. Meshing with gear 5 is gear 6, the driven member of mechanism *Y*. Gears 5 and 6 give the second speed, the former being smaller than the latter. Low speed is obtained through gears 7 and 8, of which the former is keyed to the countershaft. On an extension of the driven member of mechanism *Y* is keyed the cam 9 of an ordinary over - running clutch, and gear 8 drives this cam member through rollers 10 in the usual way. When the driven member of mechanism *Y* rotates faster than gear 8, the latter idles.

A sleeve 11, loose on the main

Speed Changes in Macallen Transmission

shaft, is provided with an integral, flanged drum at its rear end, through which it connects to the universal joint at the forward end of the propeller shaft. Gear 12 of the reverse-drive train is loose on sleeve 11. The sleeve is splined and carries a sliding clutch member 19, by means of which either the driven member of mechanism *Y* (gear 6), or gear 12 can be locked to the sleeve, the former for forward and the latter for reverse motion of the car. The sliding member 19 of the clutch may be controlled by means of either a knob on the dash or a finger lever on the steering post. This is the reversing control and has three positions—forward, neutral and reverse.

Within the drum-shaped rear end of sleeve 11 there is an over-running clutch comprising the cam 25 and a series of rollers. As long as shaft 1 rotates faster than sleeve 11, this clutch over-runs, but as soon as sleeve 11 catches up with shaft 1 the two are locked together. The object of this over-running clutch is to make it possible to use the engine as a brake when in direct drive, and also to act as a synchronizer for the direct drive. The synchronizing action is as follows: When the driver closes the throttle and the propeller shaft in consequence tends to over-run the crankshaft, 1 and 11 are locked together, and when the driver then opens the throttle again, torque-balancing mechanism *Y* engages and the drive is direct. It is obvious that this over-running clutch automatically synchronizes the members of the direct-drive clutch.

Operation of this transmission is as follows: Suppose that the driver has set the reversing lever or knob for forward drive. He now releases the clutch pedal and the car starts in low gear, the drive being from gear 3 on the main shaft to 4 on the countershaft, and from gear 7 on the countershaft to gear 8; thence through the over-running clutch 9 and clutch member 19 to sleeve 11, which is, in fact, the main drive shaft of the transmission. Torque - balancing mechanisms *Y* and *W* are now inactive, since their parts are subject to the friction of motion only, the driven member *B* turning at a lower speed than gear *A*, so that there is relative motion between these parts, which keeps the rollers turning.

After the car has been accelerated in low gear, the throttle is closed to bring the engine down to its idling speed, and is then reopened to bring about synchronization between the members of the

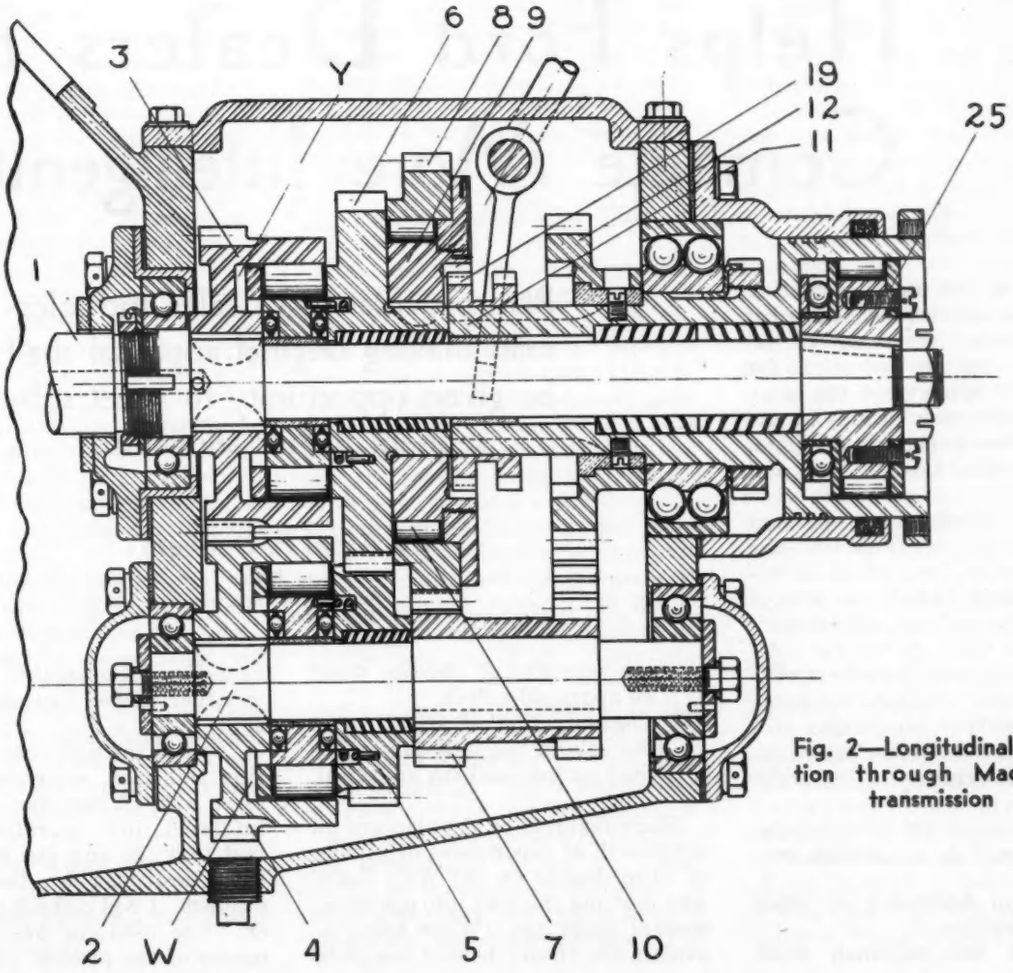


Fig. 2—Longitudinal section through Macallen transmission

mechanism *W* of the second speed. The rollers in this mechanism now come to rest, wedge in between the cylindrical and cam surfaces, and cause the driven member to be driven positively. The drive is now through gears 3 and 4, 5 and 6, and thence through clutch member 19 to sleeve 11. Gears 7 and 8 now idle, the cam member 9 over-running gear 8. Mechanism *Y* also is inactive, since its members have not been synchronized.

To make the change to direct drive, the throttle is practically closed, with the result that the engine is slowed down to the speed of the propeller shaft. At this moment the synchronizing clutch at the rear end of sleeve 11 takes hold, locking the sleeve to shaft 1 and causing them to revolve in unison. Then, when the throttle is opened again, the torque-balancing mechanism *Y* engages and the drive is direct. The driven member of torque-balancing mechanism *W* new overruns its driving member.

If the driver now wants to change to a lower ratio, he disengages the clutch without changing the throttle position. This causes the engine to speed up and the car to slow down. As the driving force of gear *A* of mechanism *Y* ceases, the torsion spring *p* disconnects the mechanism. Both the torque-balancing mechanisms are now in the idling or open positions, with the rollers up against the non-driving faces. When the clutch is engaged again, mechanism *W* takes up the drive first, because the slots *s* are narrower in it than in mechanism *Y*, hence the drive will be through the second gear. On the other hand, if the engine were allowed to speed up considerably and the car to slow down proportionately before the clutch was engaged again, then the drive would be taken on the low gear. The transmission therefore is selective and it is not necessary to pass through the intermediate speed when changing from high to low or vice versa.

Other advantages claimed for the Macallen transmission are that each gear can be used over the whole speed range of the engine, and that if the car slows down so much that the engine becomes jerky —which, of course, means that there is a reversal of torque in the drive — the transmission automatically changes to a lower gear, thus preventing stalling of the engine and car.

Factory-Sponsored Unisales Company

Helps Ford Dealers to Compete More Intelligently

Plan provides that dealer and salesman making original appraisal shall be given opportunity to meet subsequent higher allowances

by Athel F. Denham
Field Editor
Automotive Industries

ONE of the most interesting sales-service plans aimed at sounder economic fundamentals, is now in operation for Ford dealers in many of the large multiple dealer communities of the country—New York, Philadelphia, Chicago, Boston, Los Angeles, and elsewhere.

The plan is directed and operated by a separate organization—the Unisales Service, Inc., whose activities are closely linked and always subject to the general sales department of the Ford Motor Co. Although the plan has been in operation in several localities for some time, AUTOMOTIVE INDUSTRIES presents here the first authoritative analysis and description of its workings.

The various essentials which the plan is designed to accomplish are:

(1) A proper balancing of sales fundamentals.
(2) Freeing the salesman from the necessity of playing poker on appraisal values.
(3) Concentration of attention on the sale of the new car rather than on the used car appraisal.

Many features of the plan are an outgrowth of experiences originally of Ford dealers on the West Coast who first put the plan into operation several years ago. When asked to explain the theory behind the plan, as well as its operation, Jack Frost, manager of the Unisales company, said:

"One of the first reasons for putting this plan, sometimes referred to as a 'used car plan' by the uninformed, into operation was the fact that the new car message has been destroyed by the used car problem. I will make it even stronger. The used car has become the means of the present public degra-

dation of the automboile man, destroying good salesmen and sales morals. Because of it, the new car can not enjoy an established retail value.

"The used car has 'benefited' one section of the public through overallowances which often tricked the poorer, more innocent other larger sections of the public—the used car purchasers—into buying at too high a price.

"Used cars generally are oversold through: (1) Accepting a ridiculous down payment; or (2) misusing confidence placed in the dealer. In either instance, an enemy is made.

"On the other hand, under chiseling conditions dealers make low poker offers, and tell the prospect to see other dealers and then return for a higher bid. Many thousands do not return but instead are determined not to buy. All desire for a new car has been killed by the poker plays of salesmen and dealers.

"Most of the variations in used car appraisals, moreover, occur through lack of basic information with which to measure used car values, and our first corrective step was to supply such information."

"The Unisales company, not wishing to enter the valuation book field therefore entered into a contract with an entirely independent organization, Automobile Market Analysis, Inc., which sells the Unisales company a monthly guide, which gives the dealer full information on used cars based on careful surveys in the local districts in question, without favoritism for any make of car.

"This information and the plan set-up are designed to bring the full value business appraisal out at once, thus protecting both public and product."

The Unisales company itself operates exchanges for recording dealers' appraisals. They are purely bureaus of information and in no way attempt to influence or fix appraisal values.

Through the machinery of these exchanges Ford dealers assist each other in the upbuilding of salesmen's morale by permitting the salesman who first uncovers a prospect the privilege of first offering any increase in appraisal. Should a second dealer submit a higher value to the exchange, the plan provides that the dealer submitting the higher value voluntarily establishes a period of time during which he will not increase the first offer until the first salesman has made such an offer himself.

Before disclosing to the second dealer the amount of the first bid the exchange records the voluntary bid of the second dealer. If the second dealer's bid is under the first then the amount of the first bid is disclosed and the salesman of second instances attempts to outsell the first on an equal price basis if he chooses.

If the second dealer's voluntary bid is higher, the original amount of the bid is disclosed and the first dealer is notified to enable a correction of his appraisal. The raising dealer can raise immediately, however, if he deems such action necessary to prevent loss of deal to competitive make. These appraisals expire every ten days since Unisales records show that 8.5 per cent of all prospects either will buy a car during that period or cease to be prospects until some later date.

The dealers involved are thus in no way hampered in closing the deal but attempt where possible and practical to reward the salesman who first uncovered the prospect by letting him make the first increased offer. It fosters a "live-and-let-live" cooperation among them. A dealer who crosses up his brethren would also soon become a target for them and would stand to lose more than he could gain by not playing fair. A traveling force of trained men conduct educational programs with the salesmen and dealers in carrying forward this work.

Standardizes Used Car Bids

It has been found that where this plan has been in operation and all dealers have been supplied with the same market information, there has been a decreasing amount of alteration of bids when the prospect goes from one dealer to another. About 25 per cent of such appraisals are altered from the original figure according to a recent analysis.

Furthermore, investigations conducted by the administrative organization has uncovered the remarkable fact that in multiple dealer points more than 80 per cent of all prospects contacted by a Ford dealer never contact any other Ford dealer; only 12 per cent a second dealer and about 5 per cent go to more than 2 dealers. These facts seem to indicate rather clearly that there is nothing like the amount of "shopping" among dealers handling the same make in multiple dealer points as is commonly supposed. It is possible that this rather general enormous belief among dealers is due to the public's "horse-trading attitude" in dickering for a new car.

The functioning of the plan tends to favor the working type of salesman rather than the order taker who has replaced him so largely in recent years in the automotive retail trade. The order taker's main stock in trade—the raising of an appraisal bid made by some other salesman previously—is not as effective, since raising the bid usually throws the advantage back to the original salesman on a price basis. In this way non-floor days have been made profitable to a salesman. In recent times all sales advantage lay with the salesman last to contact the prospect, and the salesman who originally uncovered him and did most of the sales work, was left holding the bag. This caused a cessation of development work since no salesman wanted to be other than last man on the deal.

Normal Sales Work

Under this plan the salesman can afford to go out aggressively after new prospects, rather than hang around the floor waiting for potential customers to drop in, and at the same time he will have assurance that he will be reasonably protected after the sales presentation "hazard point" has been reached.

In other words the plan has the potential possibility of putting the retail salesman back into his normal function—that of making and uncovering prospects. Today, it is well known, the average automobile salesman does not bring in new business. Where this plan has been put into operation it has been found, that instead of the usual 75 to 80 per cent of sales originating from a contact sought by the prospect with the dealer, somewhere around 50 per cent of the sales are made as the result of contacts established away from the showroom floor by aggressive salesmen.

White - Metal Bearing Alloys

WHITE-METAL Bearing Alloys: Mechanical at Different Temperatures and Service Tests, by Harry K. Herschman and John L. Basil. Research Paper No. 512 of the Bureau of Standards. For sale by the Superintendent of Documents, Washington, D. C.

NEW FEATURES of

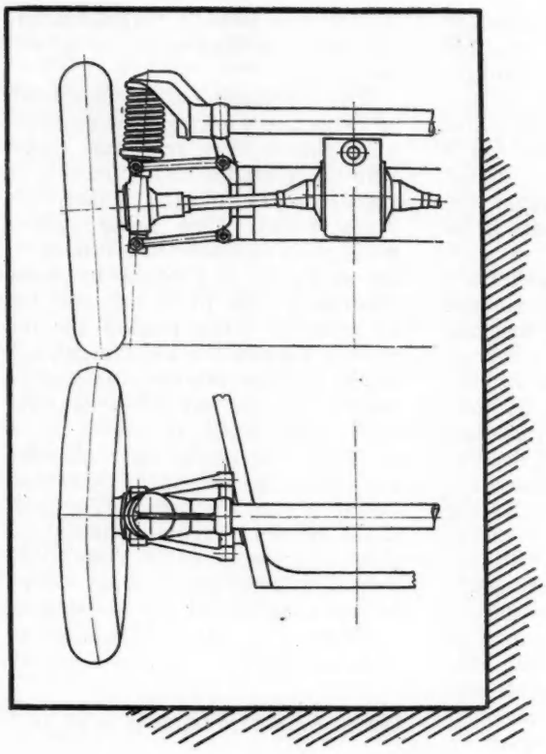


Fig. 1—N. A. G.-Voran front suspension

VARIOUS interesting details of design gleaned at the last Berlin show are described in an article in *Automobiltechnische Zeitschrift* by E. Friedlaender. Most of these have to do with systems of independent suspension.

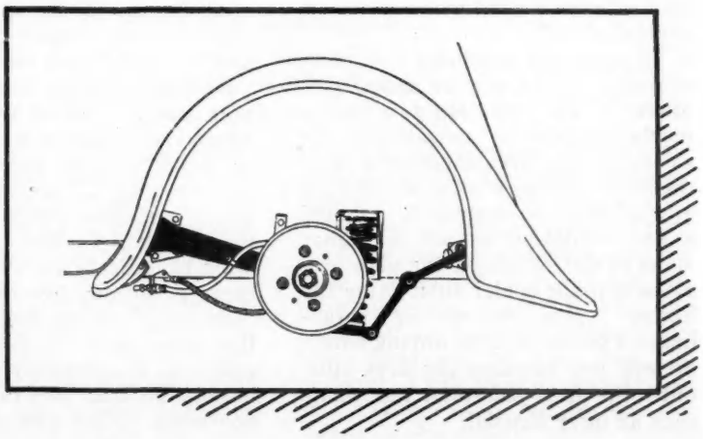
In the new N. A. G.-Voran car, cylindrical guides were employed for the front stub axles, these guides being secured to the ends of a tube forming the front cross member of the frame. Coiled springs surrounded that portion of the pin or stud below the guide. It was found, however, that since the studs on the stub axles could extend only half way through the guides, to provide for spring action, the guiding length was insufficient. Evidently the guides became bell-mouthed after a short period of use. For this reason the company has changed to the new design illustrated in Fig. 1. The steering head is held between two pairs of links from the chassis, and coiled springs are inserted between the top of the steering head and a bracket secured to the end of a tubular cross member of the frame.

The N. A. G. car has independent suspension also at the rear, where the stub axles are mounted on arms swinging in vertical planes parallel with the longitudinal axis of the car. Coiled springs are used also at the rear and are located back of the axle, while the swinging arms are pivoted in front of the axle on the ends of a tubular cross member of the frame. This makes it necessary for the springs to deflect more than the up and down motion of the axle, necessitating relatively long springs. The tendency of the springs to cock is checked by guides secured to the frame side rail. The shock absorber is mounted in back of the rear axle, and in the drawing it is shown in the position corresponding to no load on the axle. When the axle is under load the angle between the shock absorber arm and its link is less obtuse.

On front-drive cars, in which the engines are generally turned end for end, the provision of means for starting the engine by hand in an emergency usually occasions considerable difficulty. In the Stoewer light car this problem has been solved by fitting a starter ratchet to the idler wheel of the chain drive for the camshaft. The crank is supported in a bracket secured to what in this front-drive car is the rear end of the engine, and the latter can be started from the driver's compartment in an emergency.

In the N. A. G. air-cooled engine the cooling fins do not extend all around the cylinders but are interrupted by short fins which are offset with relation to the main fins. This arrangement, protected by a patent to Rosmaier, has the advantages of affording slightly greater cooling surface, bringing the air into more intimate contact with the surface, and preventing distortion of the cylinder. On this same engine a rather peculiar arrangement is used for heating the combustible mixture. There are two exhaust pipes running parallel with each other and the carburetor is mounted

Fig. 2—N. A. G.-Voran rear suspension



f GERMAN DESIGN

1—Two New Independent Wheel Suspensions
2—Novel Starter Ratchet for Front Drive
3—Unusual Finning on Air-Cooled Cylinder
4—Ingenious Method of Heating Mixture

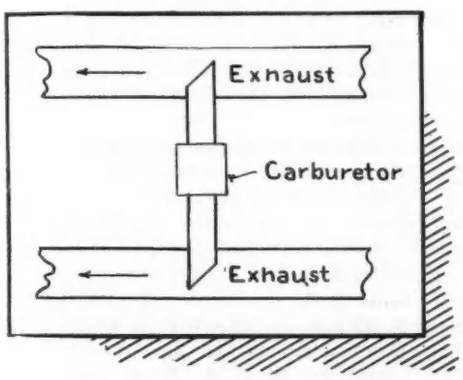


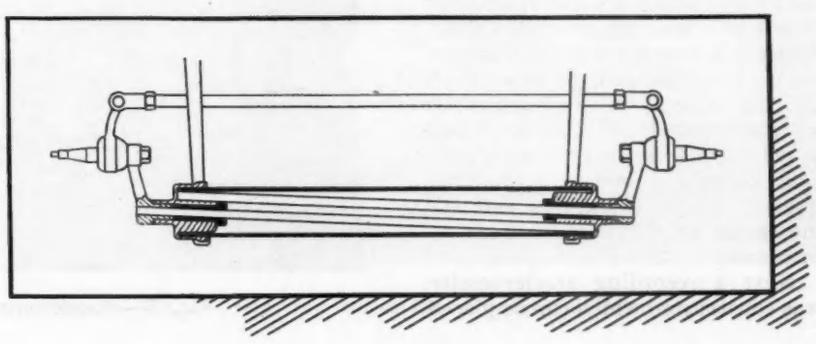
Fig. 3 — Charge preheating system on N. A. G. car

between them. Tubes from the two exhaust pipes extend to the inlet manifold jacket. Looked at from the outside it appears doubtful whether there will be a flow of hot gases to the inlet jacket, as the pressure conditions in the two exhaust pipes at the points where the tubes connect to them are identical. However, as shown in the sketch, the ends of the two connecting tubes are cut off at an angle of 45 deg. inside the exhaust pipes, one opening being in the direction from which the exhaust gases come and the other in the direction in which they flow, hence there will be flow from one of the exhaust pipes to the other.

A very striking independent front suspension has been developed by Dr. Porsche, formerly chief engineer of the Austrian Daimler Company and of the German Daimler Motor Company. The front wheels are mounted on swinging arms which in turn are mounted on shafts extending through a large-diameter tube forming the front cross member of the frame. The shafts have a bearing in the end of the tube at which they enter and are anchored in the opposite end, and spring action results from torsional deflection of the shafts. In order to prevent interference between the two shafts, they are slightly inclined toward the axis of the tube. Some of the objections raised to the design are that there is variation in the tread whenever the shafts twist, and that the anchorage of the shafts, etc., would have to be very secure in order that the system may continue to operate faultlessly.

A NEW system of scavenging two-stroke engines, due to Dr. Adolf Schnuerle, has been in use for some time on the two-stroke automobile engine of the D.K.W. small car. With this system, the scavenging ports are located alongside, instead of opposite the exhaust ports. This compels the scavenging air to rise to the top of the cylinder on the side opposite the ports and to descend again on the port side, and it obviates the need for a deflector on top of the piston. The system has been applied also to two-stroke automotive-type Diesel engines by the Humboldt-Deutz Motoren A. G. and is said to have given a b.m.e.p. of 85 lb. per sq. in., which is exceptionally high for two-stroke engines.

Fig. 4—Sketch of Dr. Porsche's independent front suspension



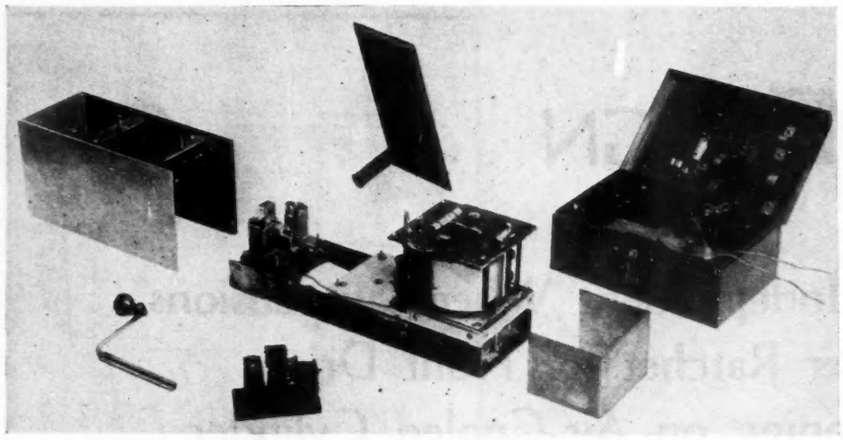


Fig. 1—Illustration showing accelerometer open

by H. M. Jacklin
and George J. Liddell

A "COMFORT INDEX," by means of which the degrees of riding comfort of different passenger cars under the same speed and road conditions, or those of the same car at different speeds and under different road conditions can be directly compared, has been developed as a result of experimental work at Purdue University. This research work has had for its objective creation of a method of expressing the riding comfort of passenger vehicles in numerical terms and of equipment for making measurements to obtain the basic data.

Riding comfort is affected by vibration more than by anything else but, while we are accustomed to speak of the intensity of vibration there is no single unit in terms of which this intensity can be expressed. In Purdue investigations, which are summarized in this article, this difficulty was met by the assumption that the two factors on which the effect of vibration on riding comfort depend, are the frequency and the maximum acceleration of the vibration cycle.

In a first series of experiments, made with "normal human beings" on a vibrating platform of which the frequency of vibration and the acceleration could be readily determined, data were gathered from which a mathematical relationship between frequency and acceleration on the one hand and riding comfort on the other, was deduced. An equation was thus obtained which gives what is known as the "comfort index" in terms of the frequency of car vibrations and the maximum acceleration of these vibrations.

Next a recording accelerometer was constructed which can be placed in the seat of a car, and when the car is driven over the road, will trace a curve which shows the frequency and acceleration of car vibrations. By inserting the data thus obtained in the equation for the comfort index, the index for the car under test is obtained. This, of course, applies only to the particular speed at which the car was driven and the road over which it was driven. Trials can be made at different speeds and the results presented in the form of a graph in which the comfort index is plotted against the speed, while the road conditions of the test course can be described on the chart.

The Purdue accelerometer in its present form, with reaction elements adapted to two ranges of frequency, will make records showing the wave forms and values of accelerations of from 2 to 60 ft. per sec.,^{2} at any frequency up to 100 cycles per second. In the course of the investigation covered in this article, passengers in automobiles notified the investigators whenever the riding conditions were such as to cause them annoyance; and this information, together with accelerometer records of the vibrations, as used in formulating a relationship between the frequency of vibrations and the rate of acceleration on the one hand and riding comfort on the other, in numerical terms.

Human reactions to vibratory influences were studied with the Purdue vibrating platform, a machine built to produce vibrations of known characteristics and equipped with a seat for subjects. Persons sitting on this seat were subjected to vibrations ranging in amplitude from 0.010 in. to 2.5 in., at frequencies varying from one-half cycle to eight cycles per second. To supplement this, another platform was built to cover the range from six cycles per second up, but so far no results have been obtained in this higher frequency range.

The accelerometer consists es-

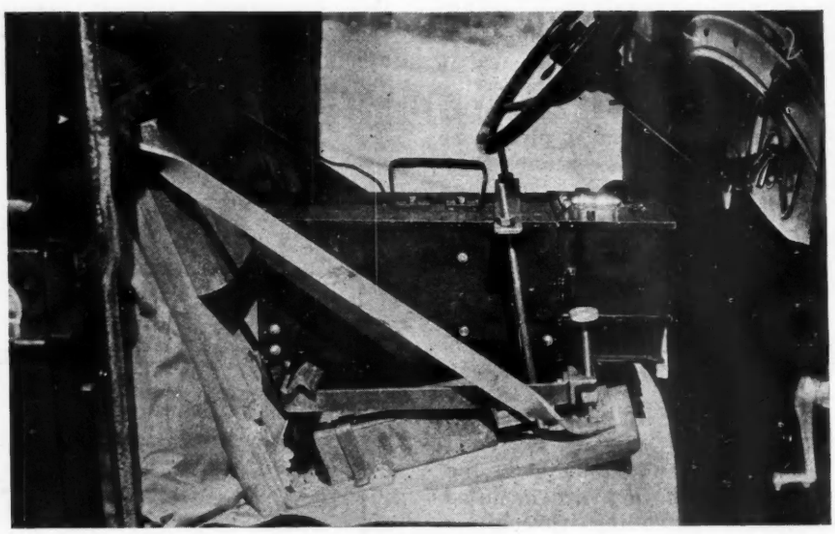


Fig. 2—Accelerometer in position in automobile

Purdue "Comfort Index" Measures How Cars Ride

Permits comparisons of riding comfort of different cars under same conditions and of same car under different conditions

sentially of three sub-assemblies, as follows:

1. The reaction-element assemblies, each corresponding to a different frequency range and each consisting of three elements with optical equipment.

2. The recording assembly, which carries a roll of photographic paper, a variable-speed spring motor for driving the paper, and an incandescent lamp, rays from which strike the moving mirrors of the reaction elements and are reflected onto the recording paper.

3. The frame and cover assembly, consisting of a 6-in. structural channel machined all over and provided with mounting holes and brackets for all major parts of the instrument. Duralumin cover plates are fitted to provide a light-tight case with smooth exterior.

In Fig. 1 the accelerometer is shown with all covers removed, one set of reaction elements being mounted on the base and the other shown alongside the frame. A roll of photographic paper may be seen in the recording compartment, at the near end, where, when the instrument is in use, it is protected by a light-tight shield. With all covers in place the instrument is approximately 19½ in. long, 6¼ in. wide, and 7¾ in. high, hence it is convenient to handle. The accessory box, shown next to the accelerometer, contains an electrical timer for determining the frequency of vibrations and has space also for additional rolls for recording paper, a crank for winding the paper-drive motor, etc.

Earlier in the accelerometer work a dummy was constructed which in Fig. 2 is shown with one of the experimental instruments in the right front seat of an automobile. Adjusting screws permit of leveling the instrument in place, after which it is clamped tight. Weights are bolted to the dummy to bring the total weight of the assembly up to 150 lb., that of an average passenger. In most of the tests reported in this article the dummy was placed in the rear seat of five-passenger cars.

Table I

Test Records, Car B
Driven Over Large Standard Obstruction
on Concrete Pavement

Run No.	40-a	40-b	40c	41-a	41-b	41-c
Speed	25	25	25	40	40	40
Tire and	5.25	9.00	9.00	5.25	9.00	9.00
Rim	18	18	13	18	13	13
Tire and Pressure	29	19	14	29	19	14
A_m	7.3	11.3	7.8	10.8	7.9	5.9
f_m	6.3	5.5	5.2	5.8	4.7	6.4
D	9.05	13.3	9.8	13.1	10.25	7.25

Fig. 3—This view shows the vibrating platform in use

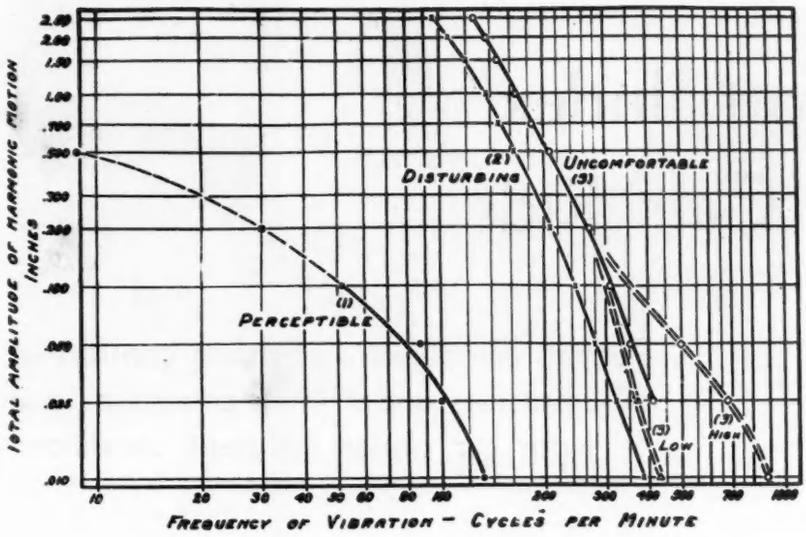


Fig. 4—Vertical motion tests on the vibrating platform

The vibrating platform used for laboratory tests is shown in Fig. 3. This machine was originally built for vertical motion only, and later it was redesigned and rebuilt to provide both vertical and horizontal motion, either alone or in combination. In addition, the seat is swiveled, so that the horizontal motion may be either fore-and-aft or sideways.

Considering first only the vertical motion of the vibrating platform, the results are shown in Fig. 4, in units read directly from the machine; i.e., amplitude of motion in inches and frequency in cycles per minute. The curves represent the following conditions, as defined for the subjects in a standard instruction sheet:

(1) *Perceptible*—You now feel that you are moving or that distant objects are moving slightly or becoming hazy.

(2) *Annoying or Disturbing*—You note that certain organs or parts of your body have greater vibration than you yourself, and you try to prevent this by tightening up on certain muscles.

(3) *Very Uncomfortable, Painful or Unbearable*—You now want *very little* of the treatment.

The thresholds set up by these curves divide the chart into four ranges; below (1), imperceptible; between (1) and (2), comfortable; between (2) and (3), disturbing; and beyond (3) uncomfortable. The branching of curve (3) at low amplitudes is a curious phenomenon which is discussed at length in the bulletin.

To make the results of the platform tests comparable with those from the accelerometer, it was necessary that the units employed in both projects should be the same; so, the maximum acceleration of the cycle was calculated for each point determined on Fig. 4, and curves for all directions of motion are shown in Fig. 5, plotted as maximum acceleration against frequency. As before, comfort conditions are designated by numbers, (1), (2), and (3), while *T*, *L* and *V* indicate transverse, longitudinal and vertical motion respectively.

All results from the vibrating platform were obtained with subjects sitting on a typical unpadded street-car seat, and to determine the difference in comfort when vibrations are transmitted by hard and cushioned seats respectively, tests were undertaken in automobiles with some of the same subjects used on the platform. In this case the accelerometer was mounted in its

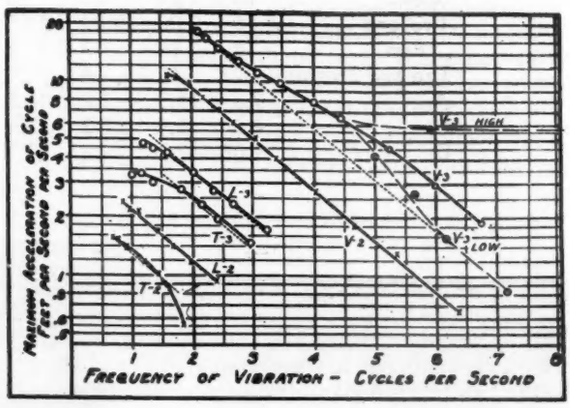


Fig. 5 — Motion tests in three directions on the vibrating platform

TABLE II

Test Records, Car A
Driven Over Large Standard Obstruction
on Concrete Pavement

Run No.	42-a	42-b	42-c	43-a	43-b	43-c
Speed	25	25	25	40	40	40
Tire Pressure	29	35½	35½	29	35½	35½
Load	Light	Light	Heavy	Light	Light	Heavy
A_m	6.7	9.6	7.7	9.1	10.2	7.1
f_m	5.4	6.0	9.0	5.2	4.9	8.9
D	8.15	11.75	11.60	11.45	12.80	10.90

dummy and carried in the seat with the passenger, so that a record could be taken at the instant when any passenger declared the motion to be "disturbing."

Results from these tests, plotted as the mean of the maximum accelerations in the three directions against the means of the frequencies, are shown in Fig. 6. By a method more fully explained in the bulletin, the mean curve of results, *M*, was obtained. Of all test results obtained with frequencies be-

low 14 cycles per second, 70 per cent lie between M_1 and M_2, and an equal number of these results are located above and below M. Curve C is the plot of an equation which gives an approximation to M and is used as a basis for the analysis of car-comfort tests.

In Fig. 7 curve M is compared with certain test results from the vibrating platform. Curves V-2 and V-3 are the same as in Fig. 5, while V-2/5 represents data for the disturbing condition on the platform with combinations of vertical and horizontal motion, being platted as the mean of maximum accelerations against the average frequency. Three relationships may be observed:

1. V-2/5 and the loop of M bear a striking resemblance.
2. The downward slopes of M are very nearly parallel to V-2.
3. The general trend of M keeps it substantially parallel to the high branch of V-3.

While no particular significance can be attached to these observations at present, they indicate that definite relations may be found between the comfort values of hard and cushioned seats.

As noted in the discussion of Fig. 6, curve C represents an approximation to the mean result with cushioned seats; it is a plot of the equation

$$A\,e^{0.045\,f} + 0.9\,\cos\,1.57\,f = 4.5 \quad (= D),$$

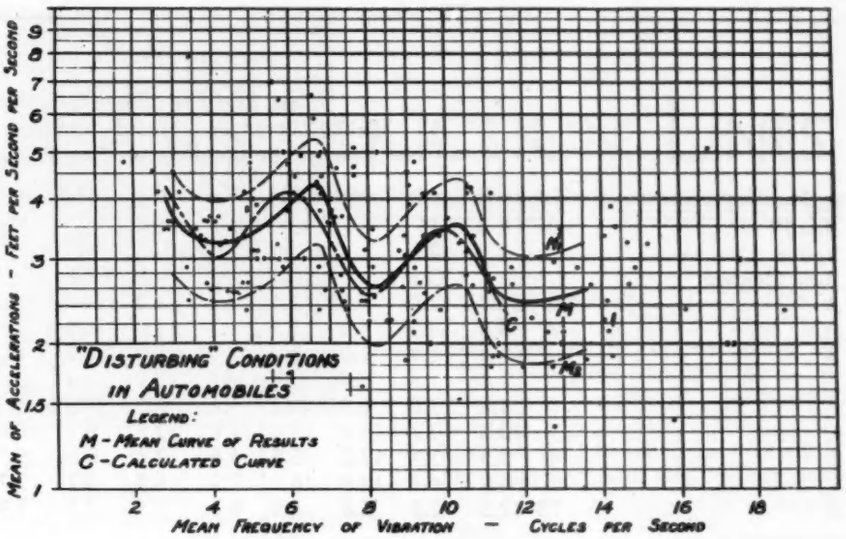

MEAN OF ACCELERATIONS - FEET PER SECOND PER SECOND
"DISTURBING" CONDITIONS IN AUTOMOBILES
LEGEND:
M - MEAN CURVE OF RESULTS
C - CALCULATED CURVE
MEAN FREQUENCY OF VIBRATION - CYCLES PER SECOND

Fig. 6—These curves show the result of road tests

where A is the average of the maximum accelerations in the three directions; e, the base of the Naperian system of logarithms; f, the average of the three frequencies, and 1.57 f is expressed in radiians. This gives an exponential curve with a cosine wave superimposed upon it, and D may be called an index of the riding comfort of automobile seats.

Since curves M and C are based on experimental data of combinations of maximum accelerations and frequencies at which the ride begins to be disturbing, it is obvious that if values for A and f are inserted in the equation and the calculation is carried through—which is facilitated by the use of computing charts constructed for the purpose if the value of D found is greater than 4.5 it signifies that the vibration experienced by the passenger is disturbing or annoying, whereas if it is lower than 4.5, the ride is comfortable.

By means of the instrument referred to in the foregoing, vehicles may be given a numerical comfort value for fixed conditions, and different cars can be directly compared with each other. Tests to determine the effects of changes in the car itself and in the operating conditions have been carried out as part of the present program, and their practicability has been proven.

Tables I and II are test results from two cars, one a light coach, the other a heavy sedan, over the same road and obstruction. On the light car the size of the tires and the tire pressure were changed; on the heavy car, the tire pressure and the loading, while both cars were driven at two speeds over the standard obstruction. In the tables, A_m is the mean of the accelerations in the three directions, determined by a method which is described in the bulletin, and f_m is the mean of the frequencies. D is the comfort index previously mentioned, and changes in value of this index are in conformity with what would be expected from a general knowledge of the effect of various factors on riding comfort:

1. Reducing the tire pressure lowered the value of D, indi-

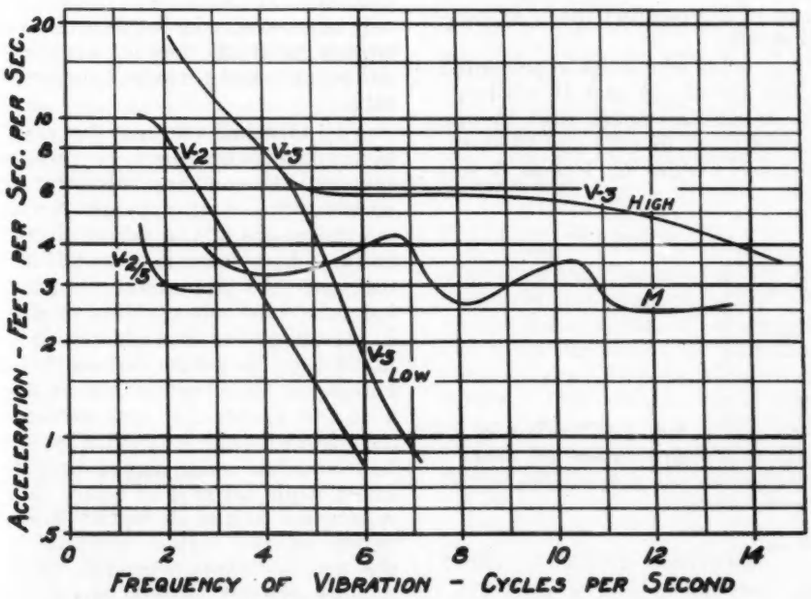


Fig. 7—Comparison of tests on hard and cushioned seats

TABLE III

Test Records, Car C
Driven Over Five Road Surfaces
No Change in Loading or Tire Pressure

Run No.	44a	44b	44c	44d	44e	45a	45b	45c	45d	45e	46a	46b	46c	46d	46e
Road*	S B	R B	C	G_1	G_2	S B	R B	C	G_1	G_2	S B	R B	C	G_1	G_2
Speed			25					40					40		
Ride Control			Out					Out					In		
A_v	5.0	14.3	2.0	4.0	2.0	7.3	24.3	4.7	3.0	2.7	7.7	28.0	3.7	6.7	4.3
A_t	1.7	3.0	1.3	4.0	3.7	1.7	8.0	1.0	3.7	3.0	2.0	6.7	2.0	2.7	3.7
A_l	3.3	12.0	1.3	1.0	2.7	2.0	9.0	1.3	1.0	1.3	2.7	7.3	1.7	4.3	1.0
A_m	3.3	9.8	1.5	3.0	2.8	3.7	13.8	2.3	2.6	2.3	4.1	14.0	2.4	4.6	3.0
f_v	6.1	1.8	7.0	6.0	16.8	4.4	2.2	4.3	8.2	7.4	4.8	3.3	7.0	3.0	2.9
f_t	10.3	10.6	10.7	15.7	15.6	14.8	13.2	8.9	24.6	21.9	15.5	13.9	7.9	22.3	21.3
f_e	2.4	1.9	3.1	17.0	15.8	4.6	2.1	5.5	8.2	10.9	4.8	2.5	4.4	3.2	3.6
f_m	6.3	4.8	6.9	12.9	16.1	7.9	5.8	6.2	13.7	13.4	8.3	6.6	6.4	9.5	9.2
D	3.75	12.5	2.0	5.6	6.8	6.3	17.15	2.2	3.95	3.82	6.85	18.4	2.7	6.3	4.2

*S B—Smooth Brick. R B—Rough Brick. C—Concrete. G_1—Gravel, Coasting. G_2—Gravel, Pulling.

cating an improvement in comfort.

2. Changing tire cross-section showed a gain in riding quality at one speed and a loss at another, which doubtless means that the balance and frequency of the car as a whole are changed materially.
3. Increasing the load improved ride, as would be expected.
4. Change of speed brings about various degrees of comfort change, due to natural periods of the entire car.

Test results from another car are shown in Table III, the various tests representing differences in road surface, speed and shock absorber setting, which latter was determined by the position of the "Ride Control" handle on the instrument board of the car.

From Table III it may be seen that:

1. Changes in speed have different effects.
2. Changes in shock-absorber setting have marked and consistent effects on all road surfaces.
3. Road surfaces may be rated in the following order:
   a. Concrete (comfortable)
   b. Gravel
   c. Smooth brick
   d. Rough brick (very uncomfortable).

Actual test records from which the tabulated values of acceleration and frequency were calculated are to be reproduced in the bulletin, together with sections of some other records on which the graphs of Fig. 8 are based. This latter is the form in which results of car tests will generally be presented—that is, in terms of the comfort index at various speeds.

Two types of car are represented in this figure. A and H are large cars of similar model built by one manufacturer in 1926 and 1930, respectively, while E, F and G are 1932 and 1933 models of three low-priced cars. All cars carried tires of original-equipment size and at recommended pressures. The older car was equipped with strap-type friction shock absorbers, while all of the others used the hydraulic type. For all tests in this series the left wheels were driven over a standard obstruction placed on level pavement, passenger load was the same in all cars, and car speed was carefully regulated before striking the bump. Car speedometers were used.

Since low values of *D* represent the more comfortable conditions, the scale has here been inserted to show desirable conditions near the top. It appears that the small cars compare favorably with the larger cars at most speeds, but that the extremes favor the newer, large car and point to bad periods in the small cars.

An individual car may be rated independently of others, or various cars may be compared directly, by means of this comfort index. Arithmetical means of the values plotted on this chart for cars A and H are 6.42 and 5.78 respectively, indicating relatively better riding quality in the newer car, and likewise it is found that the points for car H lie higher on the chart at six of the nine test speeds. It may be seen, however, that car A is quite consistent over the speed range investigated, while car H is no better than A between 20 and 35 m.p.h.—Evaluation of the riding qualities of the smaller cars from the chart is quite difficult, because low speed runs from two of the three are lacking.

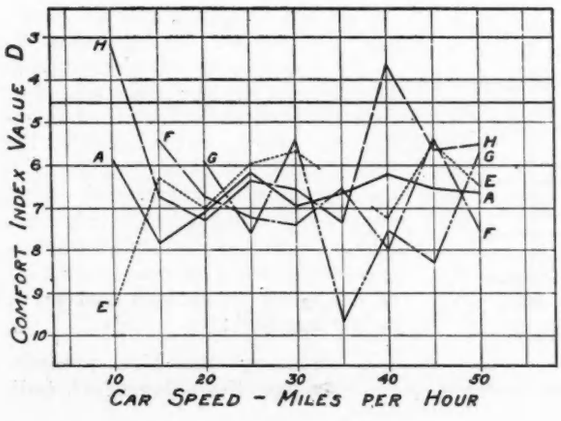
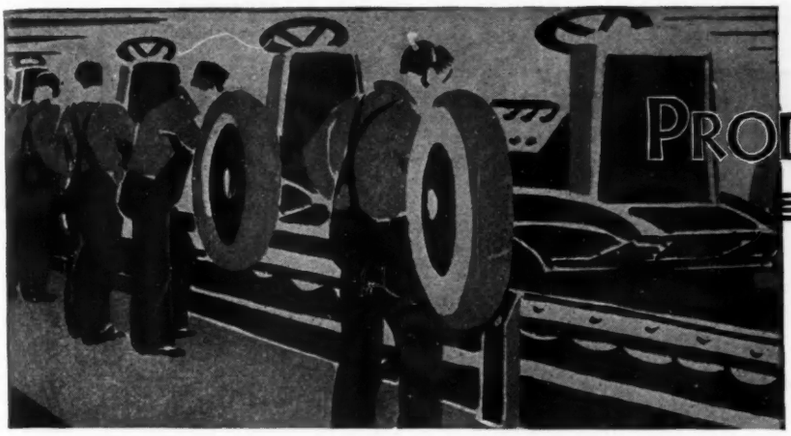


Fig. 8—Comfort index chart of five automobiles



PRODUCTION LINES

They're Gone

Engine noise, smoke, and fumes practically don't exist in the body of the new J. G. Brill (A.C.F.) Metropolitan bus. With the engine slung under the floor and well amidships, these trouble makers are just about out. Certainly no noise or smells were about when we took a ride in it. Two other features are well worth noting. One is car heating, the other, windshield defrosting. Heat comes from a separate section of the radiator core which supplies warm, fresh air controlled from the dash. Defrosting is accomplished with a warm air outlet controlled by a shutter at the top surface of the dash directly under the windshield.

Automatic Transmissions

On every side inventors and engineers have joined the big parade of automatic clutches and transmissions. A number of these have been described in *Automotive Industries*. As many more are on the fire about ready to take out of the oven. One is a magnetic clutch of novel design. Its inventor is following it up with an automatic transmission of simple, conventional design, incorporating the clutch as the source of automatic control in conjunction with a speed governor. We are watching another job which has been designed by one of the best known figures in the industry. Great developments are popping all around us. Watch for them.

Made History

H. H. Moss of Line Air Products was awarded the Samuel Wylie Miller Medal at the annual meeting of the American Welding Society. "For his achievement in the application of fusion welding and oxy-acetylene welding." There is a big story behind this award, for it recognizes the contribution to industry of the process of flame machining. Above everything else this has stimulated the development of welded steel construction for body dies, machine elements, and the like.

Jumping Ahead

Although the new Plymouth plant can build over 40,000 units per month, public demand is taxing even these facilities. Result is that DeSoto which was built under the same roof for a while has been moved out, thus giving Plymouth full possession of its home. DeSoto's new home is to be the Jefferson Avenue plant when pending changes have been completed. These changes forgo another link in Chrysler's gigantic modernization program begun last year.

Steering Ease

Correct weight distribution made possible by the underslung engine on this A.C.F. bus makes child's play of steering. No power steering needed here. It handles easily and straightens out after a turn without aid.

Getting Pressure

Understand that one of the not-so-simple problems connected with the design of a horizontal engine is the little matter of getting lubricant to the pressure side of the piston. One manufacturer seems to have the solution. Hear that he has made patent application for a design which provides pressure lubrication to the vital spot.

Conservative Optimist

Writing in *Mechanical Engineering*, June, 1933, L. P. Alford speaks optimistically in "An Appraisal of Economic Forces." He strikes a sympathetic chord when he says that "the peak of production of 1929 must not be thought of as an exceptional maximum. Rather, it must be regarded as a record to be equaled and exceeded in providing the good things of life for our people." In which we join with many vivas!

Shop Only

E. F. Houghton & Co. tell us that they have prepared for maintenance men a wall chart (24 x 36 in.) giving information on the care of leather belting. It gives mechanical rules, width of belt, belt fastenings, etc. Everything a maintenance department needs to know about the care of belting. It's free for the asking.

Alcohol Wise

Those following the discussion of alcohol in motor fuel may be interested in adding to their bibliography, progress report VI, Iowa State College. It is entitled "The Use of Alcohol in Motor Fuels," dated May 1, 1933. Contains abstracts from various technical publications, including articles by several foreign investigators. Considerable attention is given to data concerning the separation of the blend due to the presence of water.

Fabricating Stainless

Last word on the methods of fabricating various grades of stainless steels is given in a new manual by the Allegheny Steel Co. It's called "Fabrication of Allegheny Stainless Steels." Tells how to weld, form, rivet, machine, shear, etc. Being based on the accumulated experience of recent years, this manual should prove to be a valuable guide. Try it as a par for your own procedure.—J. G.

MANUFACTURING MANAGEMENT METALLURGY

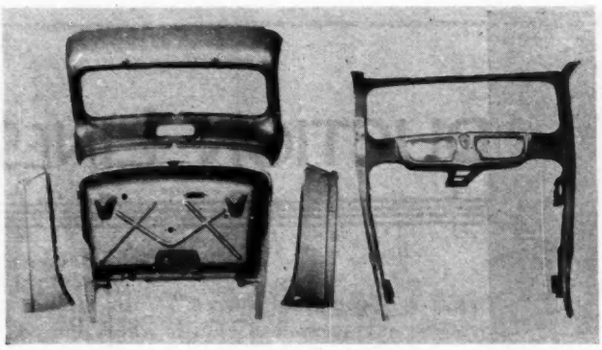


Fig. 1—Five individual stampings comprise the front end unit

Unique Cow

A NOVEL cowl construction has been tooled up recently by the Heintz Mfg. Co. of Philadelphia, which is said to be the first design of its kind to be placed in production.

As will be evident from the details that follow, the cowl embodies principles of design resulting in a construction which requires fewer parts and less weight than is customary in a unit possessing the needed strength and rigidity. What is most important, this is accomplished at surprisingly low cost.

When studied intimately, the design is found to achieve the most economical utilization of sheet metal by the expedient of producing box sections or torque members throughout, so disposed as to resist loads by tension members at every point. This is basically good engineering when it is considered that sheet steel is at its best in tension.

With this construction, doors are so hung as to swing away from the pillar above the belt. Below the belt, the pillar is arranged to permit the door to swing inward thus giving clearance to the door flange throughout the arc of rotation.

The production methods devised by the Heintz organization for building this unit proved to be so interesting that we made it a point to study the tooling and procedure in full detail. The outstanding feature of the job is the way in which coordinated planning and tool design have made possible the building of a large volume of product with standard equipment, only simple fixtures and tools, and the very minimum of productive floor space.

As shown in Fig. 1, the cowl consists of five stampings assembled and welded into an integral unit as will be described later. The upper panel forms the cowl top and hoodledge between the belt beads, the windshield opening or frame, front roof panel, and the doorway rabbets from the belt line to the roof side rail. Two cowl side panels join the cowl top panel at the belt line and form the hoodledge to the sill, the doorway from the belt line to the sill and the sill of the cowl. The dash panel joins the cowl panels at the hoodledge and forms the upper ledge for the toeboard.

The inner panel is of slightly heavier gage formed in one piece. The doorway pillars extend from the sill to the side rail, also, having an integral windshield opening and instrument board. Continuing from the under side of the instrument board, a strut runs forward to the dash, also, at the sides from the pillars, upper strainers run forward to the hoodledge. In similar fashion, the lower strainers and sills extend forward from the side pillars and join the hoodledge. These lower strainers have formed diagonally inward, a ledge for the toeboard. Hinges are mounted on the contoured angular cowl pillars in a novel manner.

Production methods at Heintz are worthy of special mention because they emphasize the possibility of economical manufacture with simple, standard equipment when supplemented by inexpensive but well-planned tools and fixtures. The photographs that follow also show how effectively this company has converted floor space, since the entire volume is handled in a com-

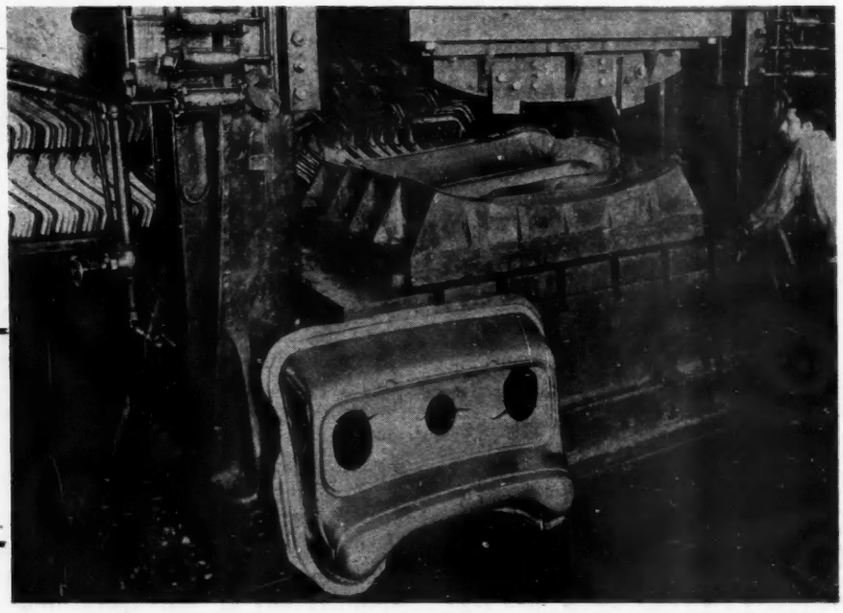


Fig. 2—Main forming operation on the cowl upper panel. It is stamped from the flat blank pierced as shown to aid in eliminating wrinkling and tearing

Construction Produced at Low Cost

Has minimum number of parts, light weight and rigidity and is built on standard equipment with simple tooling

by Joseph Geschelin
Engineering Editor, Automotive Industries

paratively small section of the plant.

Moreover, the arrangement of welding fixtures, welders, and overhead conveyors has been skillfully worked out so as practically to double the productivity of the line if necessary. This may be done simply by increasing the number of operators at each station but without adding to productive equipment. Production men surely will appreciate this stroke of planning.

Coming to details, we find that the individual stampings are produced by well-known methods current in the automotive industry, on standard presses of the required capacity. One typical example, that of forming the cowl upper panel is shown in Fig. 2. This is the main forming operation made in one draw from the flat blank which was pierced as shown to permit the metal to stretch without wrinkling or tearing. The finished stamping forms the cowl top, windshield opening, and front roof panel.

The press and die set-up in Fig. 3, takes care of the first forming of the inner cowl panel. This frame forms the instrument board, front door pillars, front header reinforcements, the strainers between the dash line and doorway pillars, sill flanges, and toeboard ledges. The first form is in the press, while the stamping outside shows it after succeeding operations of forming and piercing just prior to bending the flanges into their proper positions.

Finished stampings as shown in Fig. 1, now are ready for the final assembly operations along the welding line.

The first sub-assembly, that of joining the cowl side panels to the upper cowl panel stamping is shown in Fig. 4. The three stampings are set into the accurately machined metal fixture, carefully aligned, and clamped firmly by quick acting air-operated clamps which are shown at various points. Then they are tack-welded by a portable spot welder which operates automatically, making the welds through the beads without distortion. The head is fed from the welding unit mounted overhead.

Next, the unit is brought over to the spot welder at the right and welded completely with the specified number of spots. To facilitate handling at this point, it is suspended from an overhead hook which locates the work directly at the welding head and permits of rapid manipulation without fatigue on the part of the operator.

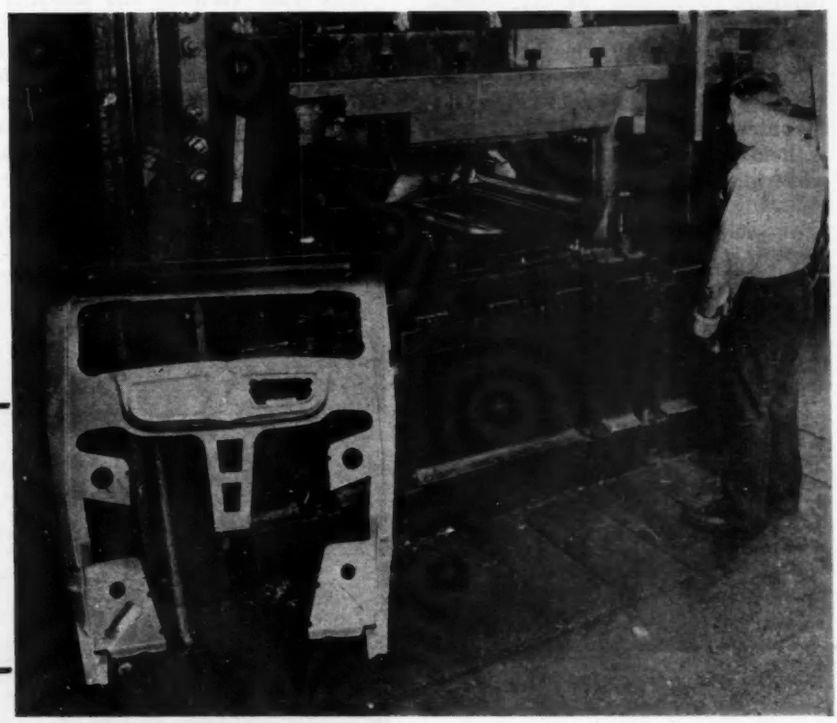


Fig. 3—Inner cowl panel with its strainers is made in one piece. The stamping in the die represents the first forming operation; the stamping shown outside shows the panel after a number of succeeding operations

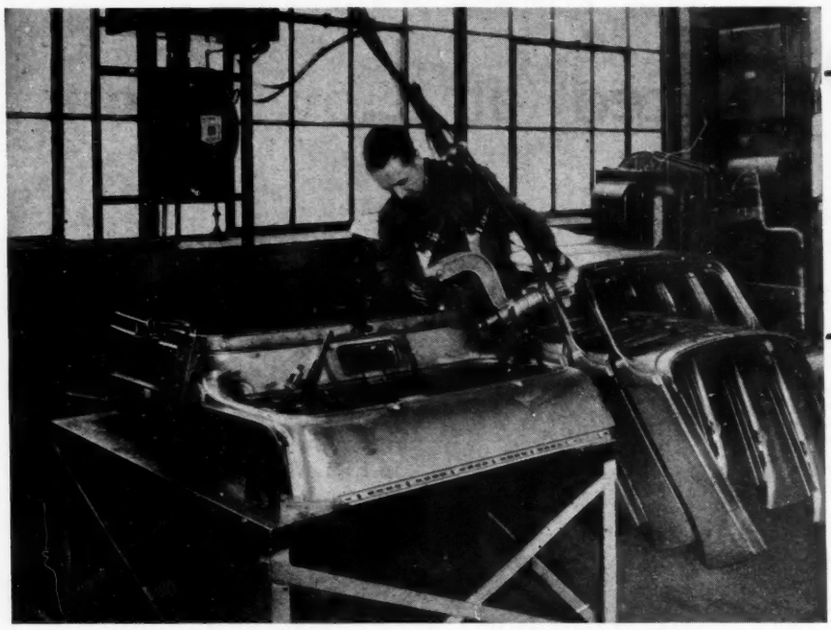


Fig. 4—Tack-welding the outer panel assembly consisting of the cowl upper panel and two side panels. The three pieces are clamped firmly into place in a metal fixture which assures accurate alignment

In the second sub-assembly operation, the outer panel is joined to the dash pan. The panel is located in a fixture registering the true shape of the hoodledge with a swinging gate that again lines the doorways to their proper contour. The stampings then are tack-welded by means of a portable welding head as before. Again, the tacked unit is removed from the jig and taken over to the spot welder at the right for finishing completely around the hoodledge. At this station, it is handled by a counterbalanced overhead fixture which facilitates matters considerably.

The final assembly operation consists of welding the inner panel frame to the outer panel assembly. As shown in Fig. 5, the inner frame is held in position on the fixture while the outer panel is telescoped directly over the flanges. The units are accurately lined up by means of the locating clamps along the doorway pillars and finally adjusted with four "C" clamps registering at the windshield pillars and at the hips of the hoodledge line.

With the units aligned in the fixture, they are tack-welded at important locating points by means of the portable welder described previously. The finished cowl then is removed from the fixture, moved over to the spot welder at the right, and spot-welded completely.

The rear view of the assembly fixture at the right in Fig. 5, shows the details of the clamps as well as the air cylinders that provide the sure, bull-dog grip so essential to the success of the operation. This arrangement is employed on the other fixtures used in the cowl department. After welding, all cowls must pass muster on the master inspection fixture, Fig. 6, which simulates the requirements of the body assembly. The cowl is placed in position on two upright gates representing the doorways, which accurately locate the bead height or belt molding on each side of the sill line. Then the controlling lines and points are checked by means of sliding plungers.

Thus, slides enter the roof opening lines, checking the contour and length where this panel joins the roof side rails. Again, a series of slides at the sill formations register the alignments of the inner panel frame to the body sills. A complete gate fitted with sliding plungers telescopes the hoodledge, thus permitting a thorough check of hood alignment. When a cowl passes this exacting test, it is ready for the final body assembly line.

In following the development of this cowl, it is evident that the degree of success attained is due to a skillful balance of correct engineering principles and production methods. Careful design has yielded a construction requiring a

Fig. 5—Final assembly of inner and outer panels. Both major units accurately lined up, clamped and tack-welded by means of the automatic portable welder. The spot welding is done on the standard machine at the right

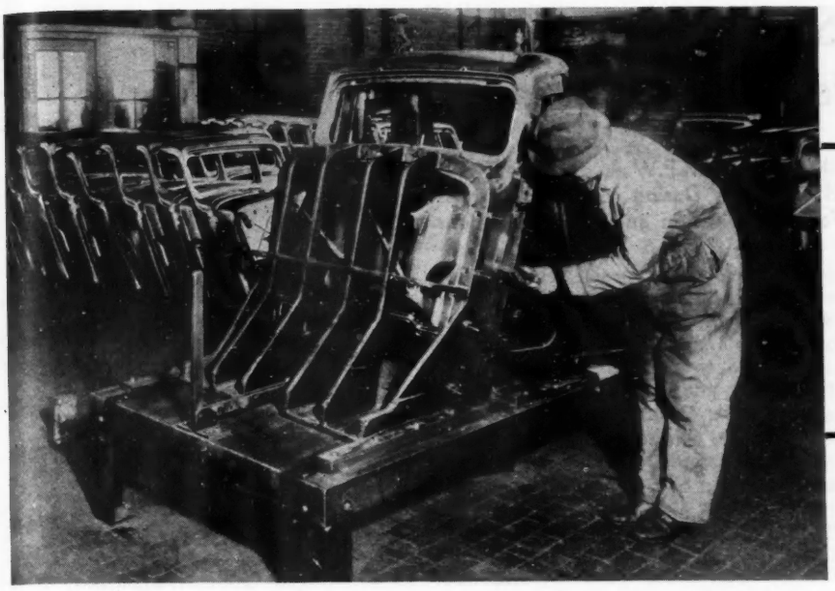


Fig. 6—All finished cowls must pass muster on the master inspection fixture. Complete gate with slides checks the alignment of the hood-ledge. Sliding pins at the header, door openings, etc., assures an accurate alignment of contours and important locating points

minimum of parts as well as low weight; good production planning has resulted in a very economical set-up capable of building these units at a surprisingly low cost.

Production men will find much of interest in this demonstration of building a large volume of product with standard equipment, simple fixtures and tools, and the very minimum of productive floor space. Here is ample evidence to refute the idea that mass production need be a concomitant of heavy capital investment and big overhead.

Danish Court Upholds American Manufacturer's Trademark Rights

A DECISION of importance to American manufacturers engaged in foreign trade was rendered in Copenhagen in March by the Maritime & Commercial Court of Denmark in an action brought by the Trico Products Corporation, the well-known makers of standard windshield wipers, against their former distributor, Mr. Kai Allerup.

The decision establishes the principle that a Danish agent or distributor who, with the consent of the manufacturer, has been using the manufacturer's name as part of his own firm style and built up a business selling the manufacturer's products under the name, must nevertheless surrender the name on the discontinuance of the relationship, even though the manufacturer's consent granting the right to use the name did not contain any reservation.

The Trico Products Corporation was represented by Marvin & Bergh, of New York City, and Thorvald Mikkelsen, of Copenhagen.

The defendant, Mr. Allerup, in 1923, had received permission of the Folberth Auto Specialty Company (which was subsequently absorbed by the Trico Products Corporation) to use the Folberth name, and, accordingly, he registered a personal firm name under the title, "Folberth Auto Specialty International." His use of the name was acquiesced in subsequently by the Trico Products Corporation until 1929, when the relationship was discontinued.

In the court proceedings the Trico Corporation contended that the defendant was not justified in continuing the use of the name after his distributorship had been terminated, and also contended that the defendant be debarred from offering for sale windshield wipers containing the name "Folberth" on the article or on the packing, and further that he be debarred from using the name "Folberth" in any way whatsoever as a designation of merchandise. The plaintiff had to rely on the general principles of unfair competition and could not invoke the protection of patent laws, because it had not maintained its Danish patents by manufacture in Denmark, as required by the Danish law.

The defendant contended that he had the right to use the name as the permission granted to him did not contain any reservation.

The attorneys for Trico Products Corporation argued that the permission to use the name was based on the business relations between the parties and that with the cessation of such relations, the permission must automatically cease, and that if the distributor desired to perpetuate the name, he should have obtained such a condition in his contract. The attorneys further pointed out that if the question had been raised at the time of the making of the contract, the American manufacturer would not have given the permission, and that the matter must be considered in accordance with the facts and motives which it is reasonable to presume existed at the time of the signing of the contract. It was shown that the predecessor of the American plaintiff held the original letters patent and had manufactured the appliance and exploited it in its own name from the beginning and had legally transferred all rights to the American plaintiff, and that the defendant had never invented anything or manufactured the appliance until recently.

The result was a complete victory for the American plaintiff.

Major Associations Swing Into Action on Industrial Recovery Law Programs

N.A.C.C., M.E.M.A., M.E.W.A., N.S.P.A. and S.E.A. Hold Meetings During Week to Discuss Codes of Fair Competition and Trade Practices

DETROIT—The automotive industry swung into action this week on plans for operation under the National Industrial Recovery Act. The Motor and Equipment Wholesalers' Association and the Shop Equipment Associates held meetings in Chicago to develop tentative codes. Group meetings were held under the guidance of the Motor and Equipment Manufacturers Association, and the National Standard Parts Association continued its consideration of the subject.

A meeting was also held here by an N.A.C.C. committee to study the desirablity of presenting a code. In addition, the many complex problems involved are being studied independently by committees appointed by a group of important parts makers headed by C. S. Davis of Borg-Warner which met here recently. Automobile dealers also are actively engaged in the development of plans.

While the major associations, as such, are taking an active part in the organization of group meetings to develop agreements on fair competitive practices, there is a growing feeling among "after-market" interests at the present time, that association lines will be disregarded in favor of developing a broad vertical code on a basis that will be of the greatest practical value in stabilizing the industry in all of its divisions and a definite aid in assisting in the accomplishment of those things for which the Recovery Act was designed.

Perhaps the most important development along organization lines is a series of meetings of groups of manufacturers of similar items to begin on June 26. At these meetings, manufacturers will be represented irrespective of association affiliation. The groups so far scheduled are piston makers in Chicago on June 26, spring manufacturers in Chicago on June 27, muffler producers in Detroit on June 29 and cylinder head manufacturers in Chicago on June 30.

The N.S.P.A. has submitted a proposed basic code of fair-trade practice to General Johnson for manufacturers of automotive service parts and materials, supplies, accessories, service tools and shop equipment. Provision has been made for minimum wages and maximum hours. It is understood, moreover to prohibit a manufacturer from selling goods below a certain percentage above manufacturing cost, and to specify that every sale must be made on a contract basis with the resale price specified thereon.

Both the M.E.M.A. and the N.S.P.A. have developed proposed organization charts of a somewhat similar nature with a "Federation of Automotive Associations" as a governing board. According to the N.S.P.A. chart, under this board there would be three administrative committees representing respectively original equipment manufacturers, replacement part and supply makers, and automotive wholesalers. Under these committees would be group committees of makers of related items in the case of manufacturers and of wholesalers in the same marketing area in the case of the jobbers. Under these group committees, there would be sub-committees consisting of producers of the same kind of products—that is, for example, the gasket and asbestos products group would be sub-divided into gasket, brake lining, clutch facing, etc., committees. Similar sub-committees of wholesalers would be formed on a local basis. Administrative authority would be vested in the three major administrative committees, the central Federation acting as a representative for the industry.

G.M. and Packard Take Dubonnet Patent Options

DETROIT—Statements in the foreign trade press credited to Andre Dubonnet to the effect that General Motors Corp. and Packard Motor Car Company have adopted his independent wheel suspension and probably would have cars at the New York Show with such suspensions, are premature and misleading according to statements obtained from the corporations involved.

"The Packard Motor Car Co. has made an option arrangement with Andre Dubonnet," according to Milton Tibbetts, vice-president of Packard, "so that we might experiment with his suspension; but we have had too little time with which to reach definite conclusions and we don't now contemplate making any material changes in our present spring suspension."

According to James McEvoy, general attorney and director of the patent section of General Motors, the corporation has also taken an option on Mr. Dubonnet's patents but whether or not any use will be made of such patents is still questionable.

Franklin 1932 Loss

SYRACUSE—H. H. Franklin Mfg. Co. reports net loss for 1932 of $1,127,253.

NE

Industry Will File Code, Johnson Says

Collective Bargaining on Hours and Wages not Essential for Approval

WASHINGTON, D. C.—The definite statement that the motor industry will file a code of fair competition with the National Industrial Recovery Administration, was made the *Automotive Industries* by General Hugh S. Johnson, federal administrator.

Immediate submission of basic codes by the 10 largest industries has been invited. These basic codes should be simple and should cover "only such agreements" as meet at once the three objectives of the Act—maximum hours of labor, minimum wages and such means as each industry may find necessary to protect itself from wasteful and unfair competition.

General Johnson has said previously that the motor industry offers no problem due to its relatively high wages and satisfactory working conditions. Consequently his desire to have an automotive code filed is pre-

(*Turn to page 770 please*)

N.A.C.C. Committee Meets

DETROIT—Members of the committee appointed by Alvan Macauley, president of N.A.C.C. to consider relation of automotive industry to National Recovery Act held a preliminary meeting in Detroit on Thursday of this week. The committee decided to begin at once complete study of the question and to hold further meetings at an early date.

Donaldson Brown, chairman, said: "Just what steps should be taken is a matter which must be studied fully and as quickly as possible for further consideration by the board of directors of the N.A.C.C." Members of the committee, all of whom were present, are Donaldson Brown, General Motors; Robert C. Graham, Graham-Paige; B. E. Hutchinson, Chrysler; A. E. McKinstry, International Harvester, and H. L. Moekle of Ford.

NS

U.S. Car Sales Soar Toward 180,000 Mark for June; Material Shortages Slow Output

Dealer Orders Still Rising, Indicating Sales Peak Not Reached Yet—Production Now Expected to Exceed Big May Total—Field Car Shortages on Some Lines

By ATHEL F. DENHAM
Field Editor, Automotive Industries

DETROIT—A possibility that June retail domestic sales of passenger cars may reach a total of 180,000 is indicated by factory reports so far available for the first half of the month. At any rate, sales should exceed the May figure of roughly 160,000.

Dealers' orders for cars are still on the increase, indicating that the peak has not yet been reached as this is written and a considerable number of producers in the low and middle range price field are faced with actual car shortages with which to fill orders. The list of such companies includes Oldsmobile, Pontiac and Buick, for whom it is estimated dealers' orders received during June will exceed production by some 25 to 30 per cent.

Many manufacturers find themselves unable to step up production in response to dealer demand due to too conservative commitments as of the first of the month with resulting material shortages. Nevertheless, production for the industry including trucks should show a total for June in excess of May when close to 220,000 units were produced.

A decided pickup in sales has been noted during the past week in the middle Western states including the Dakotas, Indiana and Wisconsin, which have been lagging during the earlier part of the year.

Individual reports, some of which are unofficial, show Plymouth with a production for June exceeding 40,000, Chevrolet with a revised schedule for June of roughly 75,000, and an increase of roughly 200 units per day in Ford production, bringing this company back close to the 2,000 daily mark. Retail sales for week ending June 10 are reported by Plymouth to show new all-time high with roughly 6,300 cars, nearly 90 per cent over corresponding week last year, with production for week ending June 17 of 8,561, also a new high record.

May Car Sales Gain 21 Per Cent on 1932

PHILADELPHIA—New car registrations for May amounted to 159,000 units as compared with 131,000 a year ago and 120,000 during April of this year, according to estimates based on returns from 30 states. This represents an increase over May, 1932, of 21 per cent and an increase over April of this year of about 32.5 per cent.

On the basis of these partial returns Chevrolet leads the field with registrations amounting to approximately 51,000, with Ford in second place with about 32,000 and Plymouth third with 24,500 units. As compared with May, 1932, Chevrolet shows an increase of 18 per cent, Ford an increase of 38 per cent and Plymouth a gain of 41.5 per cent.

Chrysler Gains

Employment totals for the Chrysler Corporation now exceed those for June, 1929. Chrysler cars for week ending June 10 showed increased deliveries of 32 per cent over preceding and 26 per cent over corresponding week last year.

Hudson-Essex sales for week ending June 10 were 77 per cent ahead of corresponding week of 1932. Even in the high price field sales increases are being reported. Cadillac, LaSalle the first 10 days of June showed 80 per cent improvement over first 10 days of April and 27 per cent ahead of same period last year. Both Packard and Buick are running behind on dealers' orders with Buick showing particular gains with its higher priced 60, 80 and 90 lines. Dodge deliveries for week ending June 17 were 2,150 passenger cars and 459 trucks, plus 2,086 Plymouths. Deliveries of all units by Dodge dealers for 5½ months this year are 50 per cent ahead of deliveries for entire year of 1932.

DeSoto, with 3000 unfilled orders on books is stepping up production the end of this week to 200 per day. Week ending June 17 showed new high record used as well as new cars by DeSoto Plymouth dealers.

Local financial circles estimate that Chrysler second quarter earnings will exceed that of any quarter since third of 1929 when earnings were $1.49 per share.

American Federation of Labor Launches Move to Unionize Industry's Workers

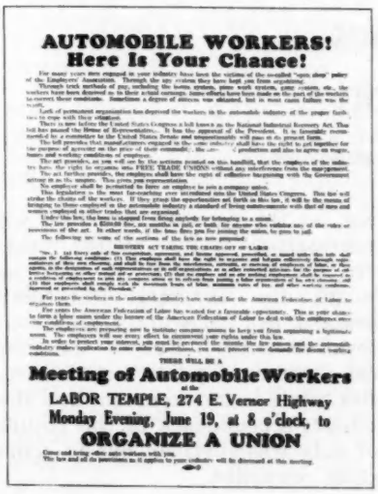
Plans Outlined at Preliminary Meeting in Detroit on June 19 to Which President Green Sent Organizers—First Organization Meeting Scheduled for June 26

DETROIT—Given impetus by Section VII of the Industrial Recovery bill, relating to prohibition of discrimination in the matter of union activities of workers and recognizing the principles of collective bargaining, the Automotive Industry is about to see the most far-reaching endeavors it has known in the direction of unionization.

Since 1921, when the once rather prominent "Automobile Workers Union" began to pass out of the picture as the result of unwise strikes, attempts at unionization of automotive workers have been rather sporadic and generally backed by the more radical elements in the community.

Prominent of late has been the "Auto Workers Union," not to be con-

(Turn to page 771, please)



AUTOMOBILE WORKERS!
Here Is Your Chance!

Meeting of Automobile Workers
at the
LABOR TEMPLE, 274 E. Vernor Highway
Monday Evening, June 19, at 8 o'clock, to
ORGANIZE A UNION

Industry Will File Code, Johnson Says

(*Continued from page 768*)

sumably for the psychological effect on other industries.

An explanatory bulletin issued by Johnson states that basic codes "containing provisions respecting maximum hours of labor, minimum rates of pay and conditions of employment, which are in themselves satisfactory, will be subject to approval, although such condition may not have been arrived at by collective bargaining."

This point is held to support the view of the open shop. However, mandatory provisions quite favorable to organized labor also appear in the bulletin. These provisions will have to be incorporated in the codes. They give employees the right to organize and bargain collectively through representatives of their own choosing; they shall not be required to join any company union or to refrain from joining, organizing or assisting a labor organization of their own choosing.

It is the hope of General Johnson, and he may appeal directly to industry to this end, that it raise wages and defer price increases. He is of the opinion that unless this is done as a means of raising purchasing power the entire purpose of the act will be defeated. If price advances can be deferred for three or four months he thinks there will be no difficulty about restoring purchasing power and prosperity.

At a press conference last Tuesday General Johnson made it clear that he wants all industries of the country to file codes of fair competition. He wants each industry to come within the largest group possible under codes to be filed. He pointed out that he preferred large-group representation in a code because it can be handled the most easily and hearings can be dispatched more quickly. However, he explained, if individual units of an industry, either single or severally, care to present separate codes he has no objection.

But basic codes will be used to guide codes of correlated groups. It is doubtful if any large industry will file a "vertical code." The differing problems within a given unit appear to make this plan impracticable.

Automotive Payrolls Gain 27% in Michigan

DETROIT — Automobile employment in the state of Michigan, according to figures released by the State Department of Labor and Industry, totaled 126,642 during May, compared with 117,499 in April and 168,930 in May, 1932, based on reports of 73 companies. Aggregate weekly payroll for May was $3,163,385, against $2,475,602 and $4,534,744 respectively. Average weekly earnings per capita were $24.89 for May, $21.07 for April and $26.84 in May, 1932.

New Allis Tractor Has Pneumatic Tires

MILWAUKEE — Allis-Chalmers Mfg. Co. is placing in production a new type of farm tractor embodying a four-speed transmission and capable of a top speed of 30 m.p.h., compared with the previous average of only six m.p.h. The tractor is equipped with low-pressure pneumatic tires, which are said to greatly improve traction, both in field and on highway.

Rusco Promotes Gerrard

MIDDLETOWN, CONN.—F. A. Gerrard, for five years Pacific Coast manager for the Russell Manufacturing Co. of this city, and more recently assistant manager of the Replacements Department, has been appointed manager of that department, effective June 12.

Chevrolet Sales Heads Hold Chicago Meeting

CHICAGO — The first Chevrolet meeting of regional managers with factory officials, ever held in Chicago, took place Thursday and Friday with divisional heads from all sections of the United States in attendance.

H. J. Klinger, vice-president and general sales manager, with ten sales executives, came from Detroit to give regional chiefs an opportunity to see A Century of Progress and to plan the visit of 1200 retail salesmen to the Fair as a reward for meritorious work.

Those attending from Detroit included D. E. Ralston and W. E. Hollar, Klinger's assistants; H. B. Hatch, M. D. Douglas, R. H. Crooks, C. P. Fisken, C. C. Carr, Harry J. Bostwick and others.

Regional managers in attendance included L. K. Cooper, Chicago; A. W. L. Gilpin, St. Louis; W. M. Packer, Oakland, Cal.; Felix Doran, Jr., Dallas; L. S. Costley, Atlanta; R. F. Hicks, Buffalo; A. F. Young, Flint, Mich., and H. I. Horton, New York City.

Hall Lamp Shipments Up

DETROIT—Hall Lamp Co. has reported estimated shipments for June of over 40,000 lamps, which is an increase of approximately 25 per cent over May.

Houdaille on Full Time

DETROIT — Houdaille-Hershey Corp. has reported that operations during June are continuing at a high level and schedules call for increased production over May. Sales during May exceeded April by 25 per cent and March by 44 per cent. All plants are on a full time basis.

Graham in the Black

DETROIT—Joseph B. Graham announces that Graham-Paige will show a profit on its operation for the first six months of the year as result of profitable operations during April, May and June, offsetting moderate loss in first quarter.

Indian Reports Loss

SPRINGFIELD, MASS.—Indian Motorcycle Co. reports net loss after charges of $46,827 for the quarter ended March 31, compared with a net loss of $40,882 in the corresponding period of 1932.

Black Joins Squibb

DETROIT—Fred L. Black, formerly advertising manager of Ford Motor Company, has been appointed assistant to the executive vice-president of E. R. Squibb and Company, New York City.

Up! Up!! Up!!! Goes Automotive Production

(*Continued from page 749*)

With the outlook as uncertain as it was at the end of 1932, it took courage to invest vast sums to give the 1933 models new sales appeal. The industry's annual display of its new products at the New York Show demonstrated beyond a doubt that automotive manufacturers had this essential element of leadership.

During the first quarter of the year, as the banking situation got progressively worse, results measured in sales made it look as though the industry has been wrong in not following a more conservative policy. But as the new deal restored public confidence, sales totals began to mount and the industry's confidence in the future not only was justified but to some extent rewarded.

Launches Move to Unionize

(*Continued from page* 769)

fused with the above organization, but promoted rather by representatives of the communist party in Detroit. This organization has called this week several mass meetings in an attempt to enroll workers (and unemployed particularly apparently) under its banners.

Directly opposed to this organization, the most powerful labor organization in the country, the American Federation of Labor, also is entering the field of active organizing work. At a preliminary meeting held Monday night these plans were announced. They are to begin to be put into operation following the arrival here this week of William Collins and Paul Smith of the organizing staff of William Green, president of the A. F. of L. The first active meeting will probably be called for next Monday night, June 26.

Presiding at last Monday night's meeting were Frank X. Martell, head of the Detroit Federation of Labor, which is associated with the A. F. of L., and Joe Hakspacher, secretary of the same organization. Mr. Martell laid stress on the fact that the A. F. of L. will not permit any communists to join its organization, nor will it permit communistic ideas to be expressed at its meetings.

In the projected unionization of labor in the automotive industry, the A. F. of L., according to Mr. Martell, is planning the most radical departure it has yet made in that it will not attempt to organize workers according to crafts but rather by plants—recognizing that automotive labor sees rather frequent interchanges of functions and has many gradations of skill requirements in each line.

Workers in shops producing equipment tools and parts for automotive companies are to be organized into affiliated unions. Plant unions will cover all workers except those engaged in plant maintenance and building, these coming under the building trades union. Membership cards in a local representing one plant will be interchangeable and transferable to another plant. The A. F. of L. in any case is planned to act as headquarters for all unions.

Initiation fee is to be $2, of which $1 goes to the A. F. of L. Membership dues minimum are to be $1 per month, of which 35 cents goes to the A. F. of L. in exchange for the official publication and to build up a strike fund of $7 per week for a period of 13 weeks.

Mr. Martell made it clear that promiscuous strikes will not be permitted by the A. F. of L., and strike funds will be available only in the case of sanctioned strikes. "The federation," Mr. Martell said, "is opposed to the use of strikes on principle. They should be resorted to only when every other avenue of peaceful negotiation for the betterment of poor working conditions or for increase in wages in line with increased costs of living fail." Mr. Martell also added in answer to a question that unemployed automotive workers will not be permitted to join unions. Their applications will be accepted, but issuance of membership must await employment industrially.

In this respect, Mr. Martell said: "The A. F. of L. is not coming out here to organize the unemployed and try to find jobs for them. If we can help those already employed to better working conditions, better wages and shorter hours as called for by President Roosevelt's Industrial Recovery bill, we will in the long run, of course, also help those at present unemployed."

Those present at the meeting were requested to make it clear to their fellow workers that the A. F. of L. plan has nothing to do with the Auto Workers Union.

June Cadillac Output Biggest in 14 Months

Sales of Cadillac and LaSalle cars for the first 10 days of June were 45 per cent greater than the first 10 days of May and 80 per cent above the first 10 days of April, according to John C. Chick, general sales manager. He also stated that they were 27 per cent greater than the first 10 days of June last year.

As a result of these increasing sales, production for the month of June will be greater than for any one month since April, 1932.

Rockwell Heads New Timken Axle Officers

DETROIT—Col. H. W. Alden, chairman of the board of Timken Detroit Axle, following a directors' meeting, has announced the election of the following officials: Willard F. Rockwell, president; Walter F. Rockwell, vice-president and director; R. J. Goldie, assistant to president and also elected to the board; R. L. Busse, vice-president in charge of sales, and W. C. Wood, who continues as secretary-treasurer.

While no announcement has been made by Timken, the resignations of the following former officers have been accepted: Col. Fred Glover, president; Roy M. Hood, vice-president in charge of sales, and D. S. Devor, vice-president in charge of production.

Diamond T Gains

CHICAGO—Officials of Diamond T Motor Car Co., Chicago truck manufacturers, report that 53 more trucks were sold during the first 15 days of this month than were sold during the entire month of June, 1932. The report includes both domestic and export sales.

Roper Names Sloan on Advisory Group of 41

Business Leaders Appointed to Help Commerce Dept. and to Do Long Range Planning

WASHINGTON—President Alfred P. Sloan, Jr., of the General Motors Corporation, has agreed to serve on the Advisory and Long Range Economic Planning Committee set up by Secretary of Commerce D. C. Roper. The committee as constituted now consists of 41 members from the industrial and financial world and included on the committee also are Ralph E. Flanders, manager, Jones & Lamson Machine Co.; Alexander Legge, president, International Harvester Co.; Lionel J. Noah, president, American Woolen Co.; Walter C. Teagle, president, Standard Oil of New Jersey; Morris E. Leeds, president, Leeds & Northrup, and Gerard Swope, president, General Electric.

The group selected will hold its first full meeting with Secretary Roper next June 26.

In working with officials of the department the committee will have two broad purposes:

1. As a group of practical and experienced men in intimate contact with the daily problems of business it will assist in directing the work of the Department along the most effective and productive lines at minimum expense to the taxpayers.

2. Assist in the selection and the development of fundamental long range studies considered essential in giving business the desired sense of direction in the form of appropriate facts, figures and other data for the collection and interpretation of which the research and statistical resources of the Department afford facilities. Into this class might fall problems such as the decentralization of industry; adjustment in international trade between countries having nationally planned economies; the relation between the increase in funded debt and the growth of the capital equipment of the country, etc.

In connection with studies of the type indicated under class 2, the committee may elect to associate with itself a group of economists who would advise it as to facilities of the Department.

The members of the committee and such economists as may cooperate with it will serve without compensation from the Government.

"I think it is important to stress the fact that the personnel of this committee has not been selected by the Department," said Secretary Roper. "The names were recommended by a small group of well known business men in order that the membership of the committee would be really representative of American trade and industry and so that each member would feel entirely free to function in the best interests of Departmental service to business."

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Both wholesale and retail trade continued to improve last week, although the increase was at a slightly reduced rate. Mills and factories reported better business, and employment and wages increased here and there. However, the business outlook is still clouded by uncertainties surrounding the outcome of the drastic legislation passed by the last Congress.

Freight Uptrend Continues

Railway freight loadings during the week ended June 10 amounted to 564,564 cars, the highest for any week so far this year. This total marks an increase of 56,312 cars above that during the preceding week, an increase of 62,861 cars above that a year ago, and a decrease of 167,863 cars below that two years ago.

Steady Increase in Power Production

Production of electricity by the electric light and power industry of the United States during the week ended June 10 was 7.4 per cent above that during the corresponding week last year. This marks the sixth successive week in which production of electricity has been above that a year ago.

Food Prices Rise

Retail food prices in the United States, according to the Bureau of Labor Statistics, on May 15 showed an average increase of 3 2/3 per cent, as compared with the average a month earlier.

Fewer Bankruptcies

According to Dun & Bradstreet, Inc., commercial failures in May totaled 1909, as against 1921 in the preceding month, and 2.88 a year ago. The number of failures in May was the lowest for any month in the last four years. The liabilities involved in the May failures amounted to $47,971,573, as against $83,763,521 a year ago.

Fisher's Index

Professor Fisher's index of wholesale commodity prices during the week ended June 17 stood at 63.5, as against 62.7 the week before and 62.1 two weeks before.

Federal Reserve Statement

The consolidated statement of the Federal Reserve banks for the week ended June 14 showed decreases of $23,000,000 in holdings of discounted bills and of $1,000,000 in holdings of bills bought in the open market. Holdings of Government securities increased $20,000,000. The reserve ratio on June 14 stood at 68.3, as against 68.1 a week earlier and 68.0 two weeks earlier.

N.A.F.C. Urges Uniform Identification System

CHICAGO—In connection with a nation-wide survey, the National Association of Finance Companies has launched a campaign for uniform identification systems for motor vehicles. A resolution, passed by the association, calls upon all finance companies, automobile manufacturers and dealers to index all cars by motor numbers, cross-indexed with any other records which they may keep to the end that they may be in a position readily to identify any cars reported by other agencies by motor numbers.

A state and county poll of methods of registration over the United States shows a majority of officials preferring the motor number as the best identification. Replies point out difficulties in using serial numbers and other data, but a great number include such information in identification reports.

Chrysler Enlarges Share of National Car Market

DETROIT—For the four months' period ended April 30, combined sales of Chrysler Motors passenger cars gained 15.4 per cent. For this period, sales of DeSoto, Dodge, Chrysler and Plymouth cars totaled 79,121 units in comparison with 68,547 for the same time last year. Chrysler Motors proportionately increased its relative passenger car sales position from 16.9 per cent of the industry's total for the same period a year ago to 21.2 per cent.

No Third Quarter Steel Prices Yet

Quotations Withheld Due to Uncertainty Regarding Effects of Recovery Act

NEW YORK—No one awaits more eagerly the shedding of definite light on what the steel market's price structure will be following its realignment under the Industrial Recovery Act than do automotive consumers. Second-quarter contracts are being fully specified against, mills having until July 15 to complete these.

New business for July shipment is being booked with the understanding that wage advances or increased freight rates will have to be borne by the buyer, the base price being that now prevailing. Some sheet rollers, however, have begun to quote prices $3 to $4 a ton higher than those now in effect.

In the strip steel market the $3 per ton advance on the hot rolled announced a month ago will become fully effective as soon as shipments against old contracts, expiring July 15, have been completed. In the wire market, with month-to-month quotations having superseded quarterly prices, higher levels for July shipment are about to be announced. Warehouse prices have been moved upwards at all distributing centers.

The problem of working out a system under which the objectives of the Industrial Recovery Act with reference to wage scales could be attained without necessitating a change in their labor policies has engaged the attention of steel producers above everything else and made for delay in the working out of price schedules. Company unions, set up by subsidiaries of the leading interest, are expected to furnish adequate means for collective bargaining on wage scales. All in all, much uncertainty overhangs the final picture which the long term steel market is likely to present and on which the plans of automotive consumers depend to a considerable extent.

In point of volume, in place of misleading percentage of capacity figures, the steel industry may be said to be now slowly approaching recovery to the 1930 rate before the setting in of the more acute period of the depression.

Pig Iron—Blast furnace interests are delaying opening of fourth-quarter books with a view to determining a price course in keeping with conditions. All of the markets rule firm to strong.

Aluminum — Automotive demand has broadened further. Prices rule firm.

Copper—Quiet and steady.

Tin—With announcement that the Administration was not in favor of immediate stabilization of the dollar in relation to the pound, consumers, renewed protective operations in the market. Straits tin opened the week at 44⅝c., 1½c. over last week's close.

Lead—Most of the buying is for August delivery, consumers being apparently fully covered for next month's requirements. The market rules steady.

Sloan Gets Appointment to Industrial Board

Announces Personnel Who Will Administer National Industrial Recovery Act

WASHINGTON, D. C.—Alfred P. Sloan, Jr., president of the General Motors Corp., has been appointed a member of the Industrial Advisory Board by General Hugh S. Johnson, administrator of the National Industrial Recovery Act. Other members of this board are Walter C. Teagle, Standard Oil of New Jersey; Gerard Swope, General Electric Co.; Edward N. Hurley, Hurley Machine Co.; Austin Finch, Thomasville Chair Co.; Louis Kirstein, Filene & Sons Co.; and William J. Vereen, cotton manufacturer.

The Labor Advisory Board appointed by Labor Secretary Perkins is headed by Dr. Leo Wolman, Columbia University.

Dudley Gates of Chicago, vice-president of Marsh & McLeannan, insurance, Chicago, has been appointed the assistant to General Johnson for industry. The labor assistant is Edward F. Grady, formerly of the American Federation of Labor. Donald R. Richberg heads the legal division, while Dr. Alexander Sachs of Lehman Corp. is chief of the research and planning division.

Deputy administrators, who will assist in conducting hearings, have been named as follows: W. L. Allen, a consulting metallurgist; Prof. Earl D. Howard; Arthur D. Whiteside, Dun & Bradstreet; Gen. C. C. Williams and Nelson Slater.

May Big Month for Canadian Chrysler

TORONTO — According to President John D. Mansfield of the Chrysler Corp. of Canada, combined shipments of Chrysler, Dodge, Plymouth and DeSoto cars in May were more than double the total delivery in the same month of 1932 and the highest for the month since 1930. Export business was responsible to a large extent for this showing.

Otto Heads A.S.A. of N. Y.

George W. Otto, service manager for the Cadillac Motor Car Company in New York, has been elected president of the Automotive Service Association of New York.

Goodrich Boosts Prices

AKRON—B. F. Goodrich Co. has raised prices 8 to 9 per cent on its entire line of tires.

April Retail Financing Jumps 45 Per Cent from March—Wholesale Also Up

Ratio of Used to New Cars Financed Drops from 1.83 Last Year to 1.48 This Year in First Four Months—Cash Buyers Account for 60 Per Cent of New Car Sales

WASHINGTON, D. C.—Retail new car financing in April declined 4 per cent in units and 11 per cent in dollar volume from April last year, but increased 45 per cent in both units and dollars from March, according to the monthly Census Bureau report on the operations of 292 finance companies who report to the bureau.

Wholesale financing in April on the other hand increased 20 per cent from last year and 47 per cent from March. During the month dealer stocks of passenger cars increased only five per cent from 212,000 to 223,000.

In the first four months of the year total retail financing volume was 29 per cent behind the same period last year and, in units, was 24 per cent less. New car financing held up better relatively than did used car business, however, as the four-month drop in new car business was only 13 per cent in units and 22 per cent in volume. For used cars the corresponding percentage losses were 29 and 38.

The ratio of used cars financed to new dropped from 1.83 in the first four months of 1932 to 1.48 in the same period of 1933. The drop in this ratio is undoubtedly due in part to a decline in the average selling price of used cars, bringing a larger percentage of the dealer's used car sales into the lowest price range, which class of business he frequently finances himself where a cash sale cannot be effected. It may also reflect a substantial decline in the dealer's overall used car trading ratio. With the average car on the road close to five years old, the average allowance made initially on the new car sale is substantially less than a few years ago, which would make less trading down necessary completely to liquidate the deal.

The ratio of new cars financed to new cars sold declined slightly from 41.5 per cent in the first four months of 1932 to 40.5 per cent this year. During the latter part of the last decade this ratio averaged between 60 and 65 per cent. The comparison indicates, of course, that roughly 60 per cent of new car sales are for cash as contrasted with about 40 per cent cash buyers when times were good.

The substantial increase in the proportion of cash buyers has been taken to indicate that the public has the money to buy if it can be induced to part with it. The change in the ratio of cash buyers, however, may also be taken as a measure of what lack of confidence in jobs and wages is costing the industry in sales. So long as workers are uncertain of the continuity of their income, they hesitate to make forward commitments. This hesitancy is possibly as much responsible as any other factor for the drop in the ratio of time sales. Based on estimated 1933 sales of 1,500,000, it alone may be costing the industry as much as 300,000 sales.

Year and Month	Wholesale Financing Volume in Dollars	RETAIL FINANCING										
		TOTAL			NEW CARS			USED CARS			UNCLASSIFIED	
		Number of Cars	Volume and Average		Number of Cars	Volume and Average		Number of Cars	Volume and Average		Number of Cars	Volume
			Total Amount	Per Car		Total Amount	Per Car		Total Amount	Per Car		Total Amount
1932												
January	$34,841,766	122,344	$44,628,529	$365	41,374	$23,475,671	$567	77,321	$19,974,286	$258	3,648	$1,178,572
February	33,276,393	123,574	44,829,138	363	40,780	23,623,496	579	78,802	19,941,665	253	3,992	1,263,977
March	34,121,364	140,779	51,148,285	363	46,234	26,887,515	582	90,121	22,779,892	253	4,424	1,480,878
April	33,903,704	155,691	56,415,652	362	57,661	31,835,792	552	93,398	23,066,269	247	4,632	1,513,591
Four Months	$136,143,227	542,388	$197,021,604	$363	186,050	$105,822,474	$568	339,642	$85,762,112	$252	16,696	$5,437,018
1933												
January	$30,159,102	91,862	$31,264,932	$340	25,555	$18,334,255	$516	54,004	$12,151,783	$225	2,303	$778,894
February	27,550,717	87,153	29,174,994	335	32,642	16,859,693	517	52,404	11,694,472	223	2,107	620,829
March	27,716,354	101,345	33,540,278	331	38,329	19,465,582	508	60,514	13,326,950	220	2,502	747,746
April*	40,912,368	131,953	45,345,822	344	55,578	28,229,388	508	73,110	16,093,060	220	3,265	1,023,374
Four Months	$126,338,541	412,313	$139,326,026	$338	162,104	$82,888,918	$511	240,032	$53,266,265	$222	10,177	$3,170,843
Per Cent Change from 1932	—7	—24	—29	—8	—13	—22	—10	—29	—38	—12	—39	—42

* April—preliminary.

Truckers Move to Organize for Operation Under National Industrial Recovery Act

Federation of State Truck Associations to Be Considered at Chicago Meeting—Adoption of Code May Involve a Form of Rate Regulation

NEW YORK—Representatives of nine state truck associations, meeting here on June 16, voted to issue a call to similar groups throughout the United States to join in the organization of a national federation of state motor truck associations to provide the trucking business with a medium for appearances before the federal government under the terms of the National Industrial Recovery Act. The proposal will be discussed at a national conference of state association representatives to be held in the Congress Hotel in Chicago on June 24-26.

A committee, consisting of W. A. Sutherland, Pennsylvania, chairman; M. W. Illingworth, Connecticut, and T. D. Pratt, New York, was appointed to make arrangements for this conference. It was also voted to inform Federal Administrator Hugh Johnson immediately of the action taken.

Suggestions are reported to have been already made to the Industrial Recovery Administration that motor truck operations provide a large field for expanded employment through reduced hours of labor. It is also reported that the Administration regards this move to form a national federation of state truck associations as a move in the right direction.

Commenting on the proposal, Mr. Sutherland said: "Because of the local character of our business, there has never been a national motor truck organization. In most of the states, however, there are now representative truck associations. We believe that the quickest and most practical way to perfect a working organization is simply to group the existing state bodies. In doing so, however, we will make it a point to clear the way for all truck associations or individual truckers to come into the organization either through the national body or through the state associations.

"What will be done with respect to the formulation of a trade code must, of course, await creation of the organization which we propose to bring about at an early date through the medium of conferences, which will be held at Chicago starting June 24.

"The problems of the motor truck operator are unlike those of industry in many respects, and it may be that no code will be found desirable. Presumably all privately owned trucks will come under the act through the medium of the trade codes joined in by their owners, and not through truck associations. Thus, for example, a retail store operating its own vehicles would handle them through such retail codes as might be formulated.

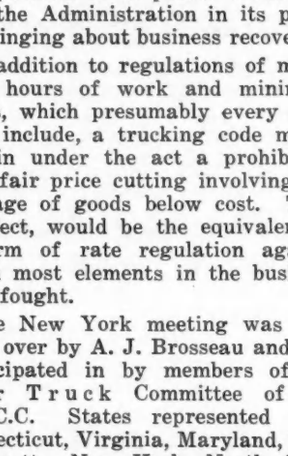
"There is a further distinction between common and contract carriers which will involve questions of procedure.

"Whatever the final program may be, however, we recognize the necessity of immediately getting ourselves into shape in order that we may be in a position to cooperate effectively with the Administration in its plans for bringing about business recovery."

In addition to regulations of maximum hours of work and minimum wages, which presumably every code must include, a trucking code might contain under the act a prohibition of unfair price cutting involving the carriage of goods below cost. This, in effect, would be the equivalent of a form of rate regulation against which most elements in the business have fought.

The New York meeting was presided over by A. J. Brosseau and was participated in by members of the Motor Truck Committee of the N.A.C.C. States represented were Connecticut, Virginia, Maryland, Massachusetts, New York, North Carolina, New Jersey, Pennsylvania, Rhode Island and District of Columbia.

Master of Engineering



Fred M. Zeder, vice-president in charge of engineering of the Chrysler Corp., who received the degree of Master of Engineering from the University of Michigan on June 19

Why Not?

Dr. G. G. Brown, of the University of Michigan, points out that it would be cheaper to use corn for heating fuel than to manufacture corn alcohol for motor fuel. Burned on the cob, he explained, a bushel of corn has 600,000 British thermal units of heating value. Alcohol provides only one-third, or 200,000 units of heating value. He advocates addition of one bushel of corn to every ton of bituminous coal, thus eliminating the corn surplus without the enormous capital expenditure needed in building distilleries.

New Nickel Iron For Valve Seat Inserts

Expansion Coefficient Same as for Cast Iron

CHICAGO—A new corrosion and heat resistant cast iron, particularly suitable for valve seat inserts, with the same coefficient of expansion as plain iron at elevated temperatures, was shown, for the first time, by the International Nickel Co. at the annual convention and exposition of the American Foundrymen's Association.

The composition of this material is 28-32 per cent nickel, 4-5 per cent chromium, and the remainder cast iron. It is very tough, machinable, and maintains its properties without deterioration at high temperatures. It has a hardness of 140-200 Brinell, and a tensile strength of approximately 30,000 lb. per sq. in.

Announcement also was made of two new materials, described as Silal and Nicrosilal types of heat-resisting cast irons, developed by the British Cast Iron Research Association.

A. L. Norbury and E. Morgan of the British Association said these cast irons possess a marked resistance to scaling and distortion at elevated temperatures.

Silal contains 5 per cent silicon, and the balance cast iron. Nicrosilal which in addition to the silicon contains more than 17 per cent nickel and 3 per cent chromium.

Pontiac Sales Nearly Double 1932 Volume

DETROIT—Pontiac national retail sales during the first 10 days of June exceeded by 95.5 per cent deliveries for the same period of 1932, according to sales manager R. K. White.

"The unexpectedly high sales volume during the early days of this month," Mr. White reports, "brings Pontiac's new car retail sales for the year up to 80.1 per cent of the total retail deliveries for the entire twelve months of 1932."

Willys Gets Court OK to Build 5,000 77's

Production to Start Aug. 1 — Truck Orders Total 3000 — 2300 Employed

TOLEDO—Sales of the new Willys 77 has gained so rapidly in the last few weeks following their offering at reduced prices that receivers were granted authority to manufacture 5000 passenger cars beginning Aug. 1 by Federal Judge George P. Hahn today.

L. A. Miller, receiver for Willys-Overland, said about 1000 workers would be added to the present payrolls of 2300.

He told the court that the company could sell 3000 units in August. Authority was given to purchase materials and parts, and it is believed it will require the next few weeks to get ready for the increased schedule. With 3000 half-ton trucks on order and 3000 passenger cars, Receiver Miller plans to have a 250-car-day schedule.

Willys 77's have been moving rapidly in larger centers, such as New York, Chicago, Cleveland, Detroit, St. Louis and Los Angeles.

Willys-Overland has made and sold 10,000 current models and has no stock on hand, according to L. A. Miller.

Twenty-five per cent of entire production has been sold on the Pacific Coast. Due to shortage of materials the plant has been shut down till Tuesday, June 27, but Miller expects steady run after that date.

Regular production of trucks, together with increased passenger car schedules "will permit the continuance of satisfactory operation and furnish a sound basis for future plans for the company which are being developed as rapidly as possible."

Motor Administrators Plan National Body

DETROIT—Plans for the formation of a national conference of motor vehicle administrators will be considered at a meeting to be held here June 27-29, which, it is expected, will be attended by representatives of 40 states and six Canadian provinces. The intention is to expand the Eastern Conference of Motor Vehicle Administrators into a national organization. Among the topics scheduled for discussion are reciprocity, uniform drivers' license laws and financial responsibility statutes.

Export Club Elects Wilcox

DETROIT, MICH.—Verne H. Wilcox, export manager of Hupp Motor Car Corp. was elected president of the Detroit Export Club at the annual meeting of the board of directors last Thursday.

Harry M. Robins of H. M. Robins Co., was elected vice-president; George Zimmerman, formerly of the foreign department of the First National Bank, Detroit, treasurer and Richard Stephenson, assistant manager of the U. S. Bureau of Foreign and Domestic Commerce, secretary.

Harry M. Jewett

DETROIT—Harry M. Jewett, organizer and first president of Paige-Detroit Motor Car Co., died here June 15 of a heart attack. He was 62 years old. He formed the Paige organization in 1910 and served as its president and board chairman until six years ago when he negotiated the sale

Harry M. Jewett

to the Graham brothers. At the time of his death he was president of the Colonial Laundry Co. of this city.

Mr. Jewett was born in Elmira, N. Y., and was educated at Notre Dame where he was prominent as a track athlete. He was a veteran of the Spanish-American War and in the World War the Paige company was active in war work under his direction. In addition to his record in the field of business, he was widely known in the field of sport, taking a particular interest in the breeding of game birds and fish.

Three New Vice Presidents for Campbell-Ewald Agency

DETROIT—H. T. Ewald, president of the Campbell-Ewald Co., has announced the promotion of J. L. Hardig, L. T. Robinson and J. R. Adams to vice-presidencies of the agency, effective immediately.

Mr. Hardig has been with Campbell-Ewald continuously since 1921, having handled many of the agency's largest accounts as account executive and now holds the position of assistant general manager.

Mr. Robinson joined the company in 1922 as copywriter and for the last several years has been an account executive.

Mr. Adams joined the agency as copywriter in 1927, was head of the copy department for several years and during the last four years has been an account executive.

New 1½-Ton Diamond T Is Priced at $595

First of a New Series of Trucks Ranging in Size Up to Three Tons

CHICAGO—A new 1½-ton truck, the Model 211SF, has been announced by the Diamond T Motor Car Company, at a price of $595.00. This is to be the first of a new series ranging in capacity up to 3 tons. While similar to the Model 210 in many respects, it includes such items as helper springs and a chromium-plated spring-bar bumper in its standard equipment and differs from it in details of design.

A choice of axles is now offered to make it possible to adapt the truck specially for particular services. With single tires the standard chassis has a semi-floating axle with a one-piece cast housing of electric-furnace steel. This axle has double wheel bearings and a straddle-mounted pinion. Where dual tires are required the truck—then known as the Model 211FF—is supplied with a full-floating axle which has the wheel bearings directly over the center of ground contact.

The new model is equipped with the same Hercules six-cylinder, 3⅜ by 4¼ in. engine as the 210, the piston displacement being 228 cu. in. and the maximum torque, 148 lb-ft. The clutch plate is provided with a flexible mounting, and the constant-mesh and third-speed gears of the transmission are of the full-depth involute type, which are considered to be more quiet in operation.

Four-wheel hydraulic brakes are standard equipment. They are provided with molded lining and act on cast iron drums. The master cylinder is of the new type incorporating the reserve supply tank, with a convenient opening under the hood for replenishing the supply. Wheels and brake drums are of the new Clark type, cast in one piece and therefore absolutely concentric. There is a contracting hand brake back of the transmission.

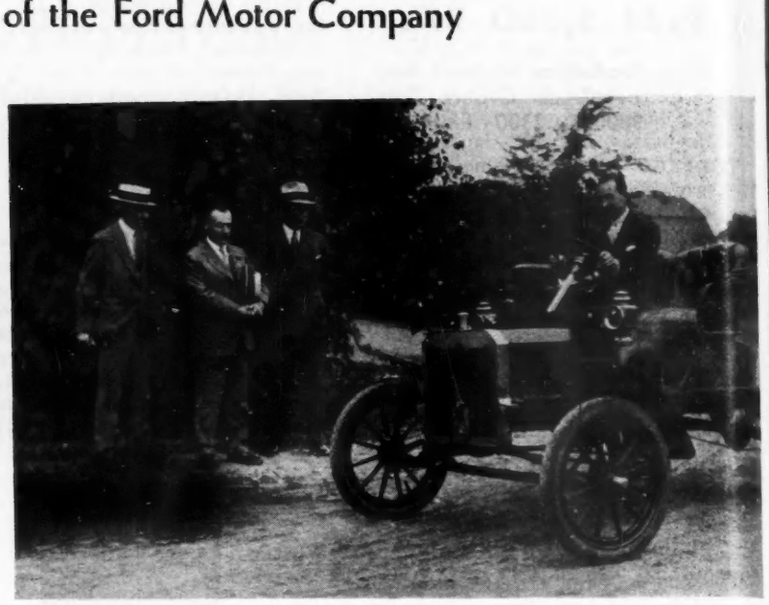
Both front and rear springs are carried in "compression" type rubber bushings and front springs are foreshackled for smoother steering and freedom from "shimmy." No lubrication is required at any of the spring shackles, all relative movement being absorbed by rubber flow.

This model is furnished in a standard wheelbase of 135⅛ in. to accommodate bodies up to 9 ft. in length, and special wheelbases of 145 and 158 in. are available for bodies up to 11 ft. in length.

Oil Marketers in Code Meeting

CHICAGO—Representatives of oil marketing and refining associations met here, June 22, to discuss the framing of a code of practices in conformity with the provisions of the recently enacted National Recovery Act.

Celebrate Thirtieth Birthday of the Ford Motor Company



Above — Mr. Ford at the wheel of the first Model A (1903) car. Right — Edsel Ford drives the first model B (1904) as Mr. Ford, Sr., P. E. Martin and Charles Sorenson look on

Olds Starts June With 80 Per Cent Sales Gain

DETROIT—Sales of the Oldsmobile six and straight eight during the first 10 days of June, exceeded the same period of 1932 by 79.65 per cent. Retail volume for the year to date is larger than the business done during the corresponding period of last year. Deliveries during the first 10-day period of June also exceeded by 15 per cent the first 10 days of May, despite the fact that May had broken all Oldsmobile monthly records since July of 1931.

"With new car demand carrying strongly into June, it has been necessary to make two increases within nine days in the Oldsmobile factory production schedule to meet dealers' orders for additional cars. The first production increase, made on June 5, stepped up the factory schedule by 42 per cent. The second increase, on June 9, raised the schedule to a point 60 per cent above the original projection."

A.S.M.E. Announces Oil and Gas Power Program

NEW YORK—The following program has been announced by The American Society of Mechanical Engineers for the Sixth National Oil and Gas Power Meeting which will be held at Atlantic City, August 23 to 26 inc.: Welding of Diesel Frames and Parts, by Everett Chapman, Lukenweld, Inc.; Causes and Effects of Pressure Waves in Fuel Injection Systems, by Ralph Miller; Reducing Performance of a Solid-Injection Engine to Standard Conditions, by Prof H. A. Everett, Penn. State College; Supercharging of Diesel Engines, by Charles G. Curtis; Effect of Controlled Turbulence, by M. S. Huckle and C. F. Taylor of M. I. T.; Low Compression Oil Engines, by Fred. Dutcher, Columbia University; Sea Power and the Diesel Engine, address by E. B. Pollister, president Busch-Sulzer Bros.

Black Holds Color Lead

WILMINGTON, DEL.—Black is the industry's first color choice for the third successive month, according to the Duco Color Advisory Service index for May. Blues again are second with maroons, greys, greens and browns following in order.

Thornton Names Furlong

DETROIT—Don. G. Furlong has been appointed general sales manager of the Thornton Tandem Co., of Detroit, manufacturers of a dual-ratio, positive 4-rear wheel drive unit, which is a patented drive for trucks.

Prior to joining Thornton Tandem, Mr. Furlong was in charge of the commercial car and truck sales division of the Dearborn branch of the Ford Motor Co. and had been associated with Ford for nine years.

General Motors Has Fewer Stockholders

NEW YORK—The total number of General Motors common and preferred stockholders for the second quarter of 1933 was 366,084, compared with 372,284 for the first quarter of 1933 and with 359,046 for the second quarter of 1932.

There were 348,224 holders of common stock and the balance of 17,860 represents holders of preferred stock. These figures compare with 354,516 common stockholders and 17,768 preferred for the first quarter of 1933.

Borg-Warner Reports Gains

CHICAGO — Employment in the plants of Borg-Warner Corp. has increased approximately 30 per cent as the result of steady gains in business, Charles S. Davis, president of the corporation, announced yesterday.

Mr. Davis expressed belief that the improvement will extend through the third quarter.

"Thus far," he said, "our June business is just as good as that in May when an especially large volume was handled. In some divisions June business shows improvement."

Ryerson Promotes Kurfess

CHICAGO—W. F. Kurfess, Manager of the Mill Department of Joseph T. Ryerson & Son, Inc., has been appointed assistant vice-president. M. J. Hartigan succeeds Mr. Kurfess as manager of the mill department.

Russell Plans to Make British Car

TORONTO—T. A. Russell, president of Willys-Overland, Ltd., has left for England to look into arrangements for the manufacture in Canada of a British line of automobiles. His company's large Toronto plant is now at a standstill because of the receivership of the Willys-Overland Company in the United States. It is understood that he is determined to continue in the automobile industry and has turned to England for a manufacturing tie-up.

New Specifications Volume Published

WASHINGTON, D. C.—The third volume of the Encyclopedia of Specifications, "Standards and Specifications for Metals and Metal Products," work on which has been in progress at the Bureau of Standards for several years, is now ready for distribution. Numerous organizations interested in specifications have cooperated in the preparation of this series of publications, which include the National Directory of Commodity Specifications as well as the Encyclopedia of Specifications. In fact, correspondence was carried on with over 500 public purchasers and more than 500 technical societies and trade associations in compiling material for the Directory and Encyclopedia.

The nationalization of commodity specifications is of great economic significance and it is to be hoped that the specifications in this volume will come into wide use in the metal industries.

Wilson Promoted

CHICAGO—R. B. Wilson has been promoted from sales manager to manager of the St. Louis plant of Joseph T. Ryerson & Son, Inc.

Buick Makes Two Increases In June Output Schedules

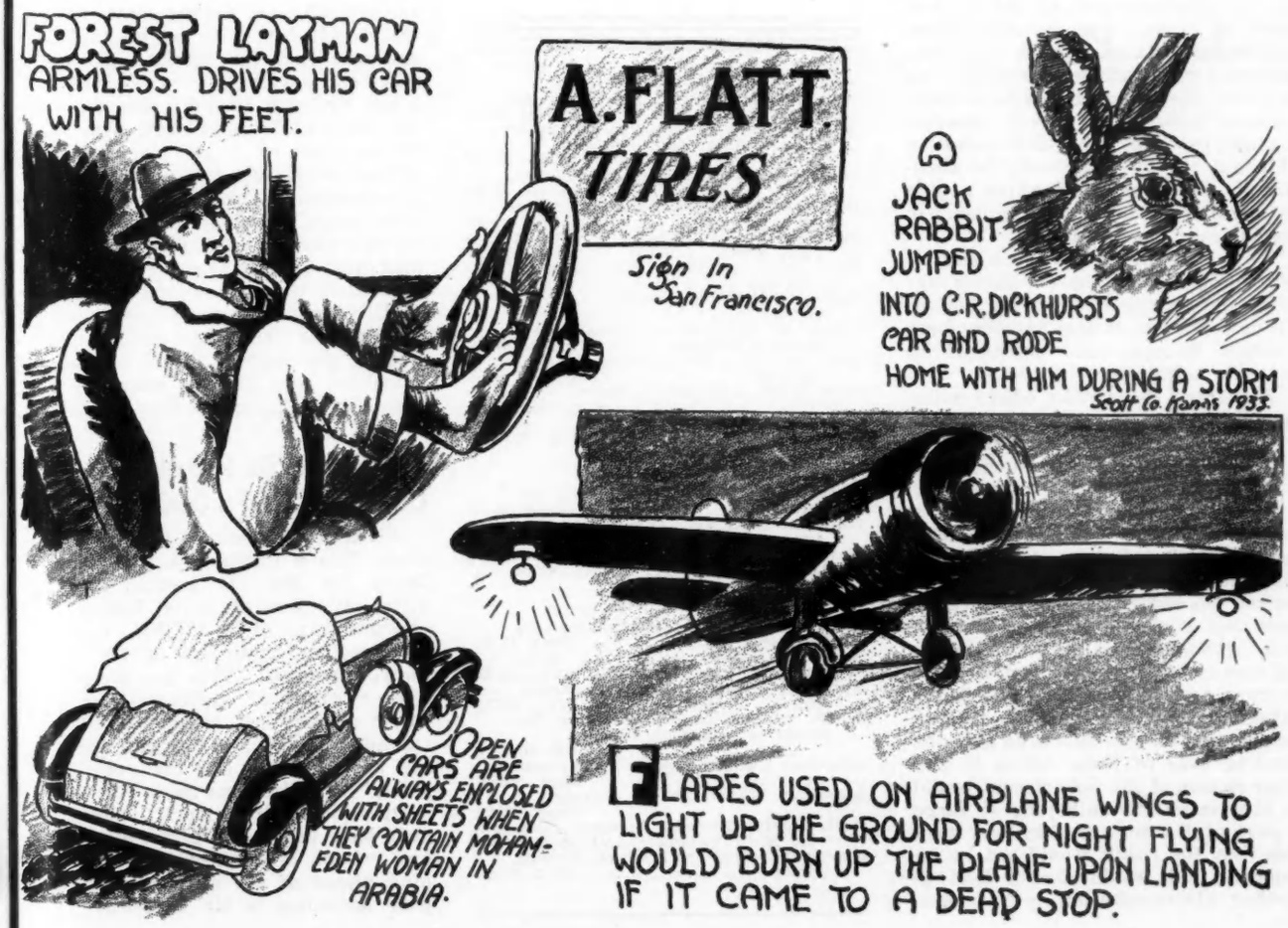
DETROIT—With Buick retail sales in the first 10 days of June maintaining the high levels established in May, two successive increases in the June production schedule to a point 38.88 per cent above the original estimate have been made.

Final figures for May revealed an increase of 19.8 per cent over sales during April. Despite augmented production in that month, stocks of new cars in dealers' hands decreased.

"An interesting development in the sales for the first period of June," Sales Manager Hufstader points out, "is found in the increasing strength shown by the 60, 80 and 90 series, which are the larger Buick models. While the series 50, the 119-in. Buick was holding closely to the high sales levels of May, the larger models registered an increase of 10.3 per cent over the first period of May."

Automotive Oddities—By Pete Keenan

Write us if you know an Oddity


FOREST LAYMAN
ARMLESS. DRIVES HIS CAR WITH HIS FEET.
A. FLATT. TIRES
Sign In San Francisco.
A JACK RABBIT JUMPED INTO C.R. DICKHURSTS CAR AND RODE HOME WITH HIM DURING A STORM
Scott Co. Kansas 1933
OPEN CARS ARE ALWAYS ENCLOSED WITH SHEETS WHEN THEY CONTAIN MOHAMEDEN WOMAN IN ARABIA.
FLARES USED ON AIRPLANE WINGS TO LIGHT UP THE GROUND FOR NIGHT FLYING WOULD BURN UP THE PLANE UPON LANDING IF IT CAME TO A DEAD STOP.

Ask U. S. to Retain Trade Service Abroad

Export Committee Offers Plan Calling for Naming of Commercial Counselors

NEW YORK—Chamber of Commerce and foreign trade groups of thirty cities have collaborated on a "plan of economy" for the Bureau of Foreign and Domestic Commerce which has been presented to President Roosevelt and Secretary Roper as a practical means of preserving the essential services of this Bureau to American business firms engaged in foreign trade. The plan is the result of a three months' study initiated by fourteen trade associations in New York united in the Joint Committee for Foreign Trade Action.

An outstanding recommendation of the plan is the appointment of "Commercial Counselors" who would have charge of all commercial activities of the foreign services of the Departments of State and Commerce in each important trade region abroad. The post of Commercial Counselor would be a new one and would include many of the duties now performed by commercial attaches and consular officers.

The committee reports that business men engaged in foreign trade are practically almost unanimously opposed to transferring the foreign service of the Department of Commerce to the consular corps of the Department of State. The consular officer, the report states, "is in no sense equipped to continue effectively the services now being carried on by commercial attaches or trade commissioners to turn over their work in this way would be virtually to abandon it, so far as constructive results to American industry engaged in world trade are concerned."

As a joint means of economizing on our foreign service the Committee suggests the grouping of foreign officers in trade regions such as Scandinavian, Eastern Europe, etc., instead of by separate countries.

Regarding the district offices maintained in this country by the bureau, the committee suggests that the present total of thirty-four such offices could be cut to fifteen.

"We believe that there should be a Bureau of Foreign and Domestic Commerce and that Bureau should be responsible to the Department of Commerce," the report concludes. "We believe that it should continue to function, broadly speaking, as an essential agency of the Government devoted to trade promotion abroad, and to the gathering of the facts of our foreign commerce. We are convinced that the handing over of these duties to any other section of the Government would be tantamount to nullifying so large a part of the service they now provide that the result would not be an economy, but would simply lead to further disorganization, with consequent acceleration of losses now being sustained by foreign traders."

Despite this and other pleas by business for the retention of commercial representatives abroad, news reports indicate that the administration is going ahead with its plan to reduce this service to business in the interest of ecenomy. Nearly 100 commercial attaches and their assistants are reported to have sailed from Hamburg and Havre for home following notice of discharge effective July 31. Bureaus at Oslo, Helsingfors, Riga, Belgrade, Budapest, Bucharest, Berne and Lisbon have been closed.

Federal Sales Gain

DETROIT—J. F. Bowman, vice-president in charge of sales of Federal Motor Truck Co., has announced that May was the best month in two years for his company. The May increase marked the third successive month of better business for Federal, with a 34 per cent increase over April. Export business in May was also well above the mark that has prevailed for some time past, Mr. Bowman continued.

CALENDAR OF COMING EVENTS

SHOWS

Am. Soc. Mechanical Engineers, Atlantic City ..... June 23-26
Am. Institute of Mining and Metallurgical Engineers, Chicago ..... June 26-29
Soc. of Industrial Engineers, Chicago ..... June 27-30
Int. Assoc. of Show and Assoc. Managers, Chicago ..... July 24-25
Eastern States Exposition, Springfield, Mass. ..... Sept. 17-23
Natl. Assoc. of Motor Bus Operators, Chicago ..... Sept. 21-22
National Metal Exposition, Detroit ..... Oct. 2-6
Motor & Equipment Manufacturers Assoc., Chicago ..... Oct. 23-28
Natl. Standard Parts Assoc., Chicago ..... Oct. 30-Nov. 3
New York Automobile Show, ... Jan. 6-13, 1934
Chicago Automobile Show ..... Jan. 27-Feb. 3, 1933

CONVENTIONS

National Association Credit Men, Milwaukee ..... June 19-24
National Industrial Advertisers Assoc., Chicago ..... June 26-28
National Metal Congress, Detroit ..... Oct. 2-6

MEETINGS

A.S.M.E. Natl. Aeronautic Meeting, Chicago ..... June 26-27
American Society for Testing Materials, Chicago ..... June 26-30
Automotive Engine Rebuilders Assoc., Annual, Chicago ..... July 10-14
S.A.E. International Automotive Engineering Congress, Chicago ..... Aug. 28-Sept. 4
American Chemical Society, Chicago ..... Sept. 11-15
American Transit Assoc., Chicago ..... Sept. 18-20
Natl. Safety Council, Chicago.... Oct. 2-6
National Metal Congress, Detroit. Oct. 2-6
American Petroleum Instiute, Annual, Chicago ..... Oct. 24-26

Farmers' Iron Horses Burn Two Billion Gal.

More Than Half of Fuel Used in Motor Vehicles

WASHINGTON, D. C.—More than 2,125,000,000 gal. of petroleum fuels, including gasoline, kerosene and distillate, together with approximately 90,700,000 gal. of lubricating oils, were used on farms in the United States in 1930, according to the Department of Agriculture. More than half of the fuel and lubricating oil, 1,240,500,000 and 46,500,000 gal. respectively, was used in automobiles. Automobiles, it was estimated consumed 1 qt. of oil per 100 miles and trucks 1 qt. of oil for each 50 miles. Other power units were estimated as consuming 1 gal. of oil for each 20 gal. of fuel.

Gas tractors used 526,500,000 gal. of fuel and 26,300,000 gal. of lubricants. Trucks consumed 225,000,000 gal. of fuel and 11,250,000 gal. of oil; stationary gas engines used 90,000,000 and 4,500,000 gal. respectively. Harvester threshers used 21,188,000 gal. of fuel and 1,059,000 gal. of oil, and electric light plants 21,627,000 and 1,081,000 gal. respectively.

The horsepower-hours developed by the various power units were: gas tractors, 2,530,000,000 for drawbar and 1,540,000 for belt work; stationary gas engines, large and small, 799,200,000 hr.; harvester threshers, 169,000,000, and electric light plants, 129,760,000 hr. The estimated mileage and fuel for trucks was 2,500 miles each, with fuel consumption of 1 gal. for each 10 miles, and for automobiles 4,500 miles each, with fuel consumption of 1 gal. for each 15 miles. Although the automobile is not considered a source of power for farm work, probably 50 per cent of its operating time is directly associated with farm business.

In 1930 there were approximately 4,135,000 automobiles, 900,000 trucks, 920,000 gas tractors, 1,131,000 stationary gas engines, 61,000 harvester threshers, and 270,000 electric light plants on farms in the United States.

Firestone Six Months' Loss Is $1,576,000

AKRON—Operations of the Firestone Tire & Rubber Co. and subsidiaries for the six months ending April 30 resulted in a loss after charges, etc., of $1,576,000, Harvey S. Firestone, chairman of the company, announced. This loss compares with a profit of $1,639,000 for the same period last year and "was caused by the general business decline, the bank holiday and cut price tire wars," Mr. Firestone said.

Operations since April 1 of this year have been on a profitable basis, and volume of business is now running ahead of the same period last year, according to Mr. Firestone.